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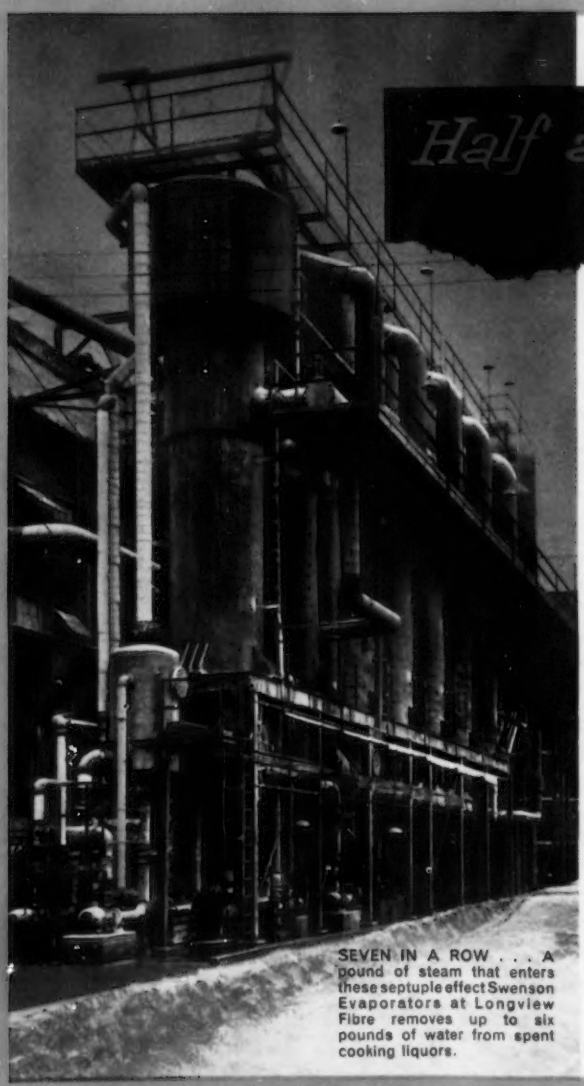
# PAPER TRADE JOURNAL

MAY 14, 1956





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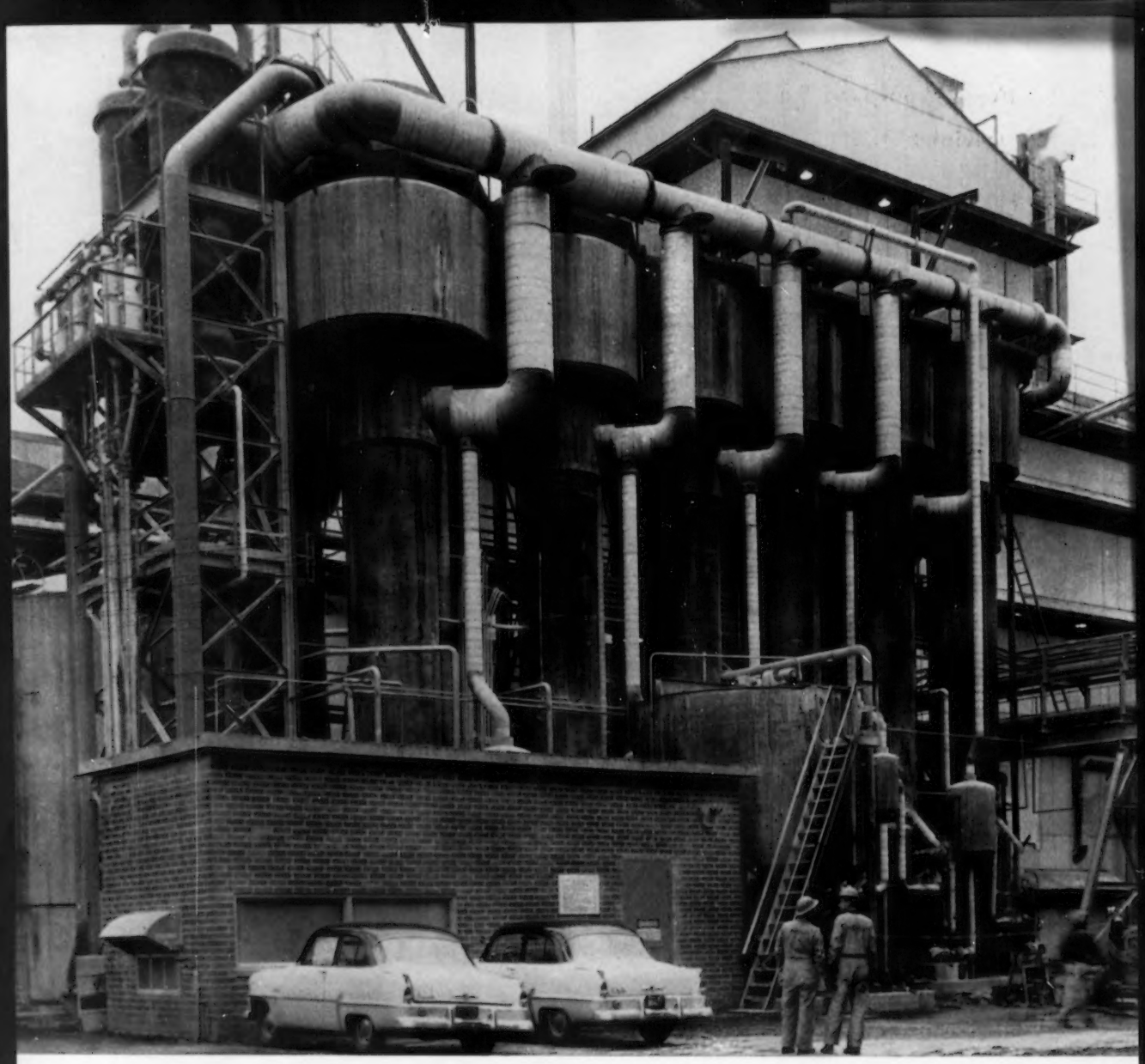

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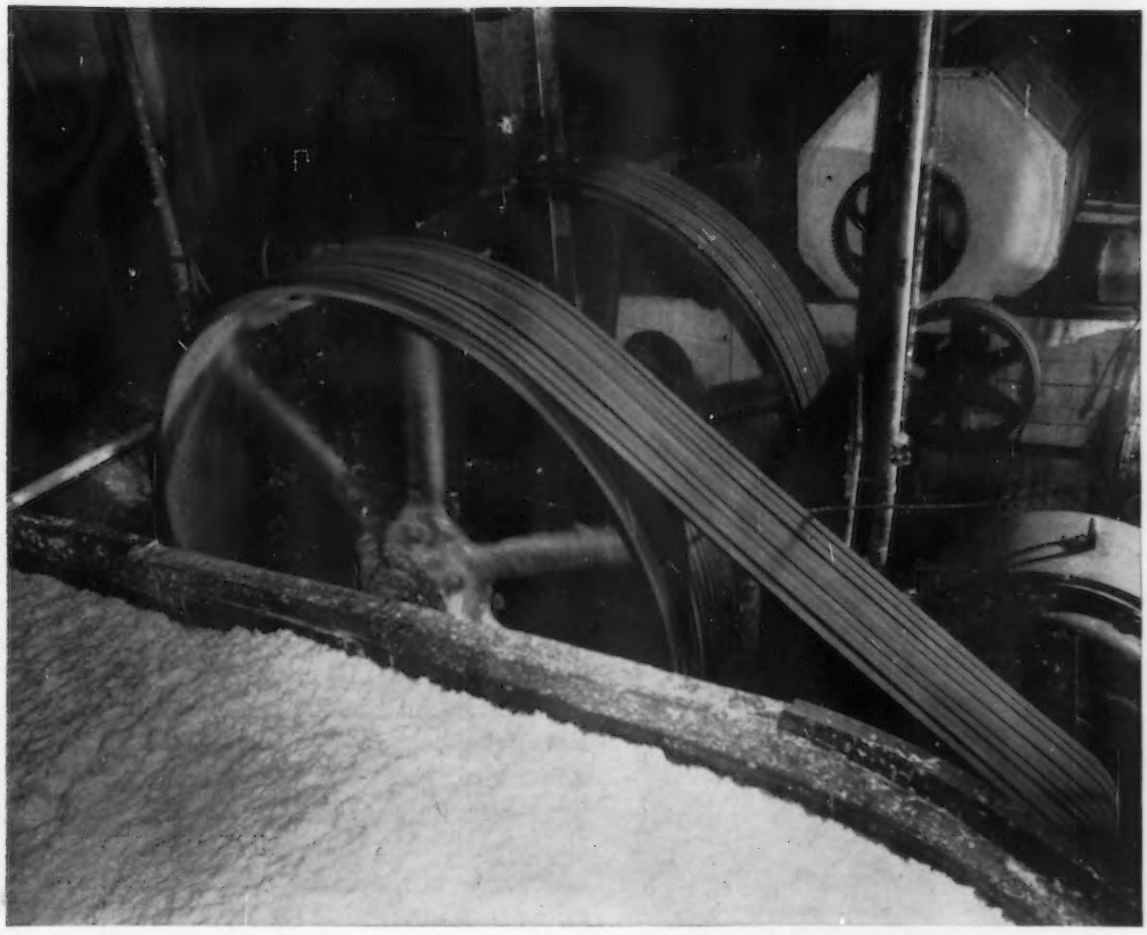

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**REMEMBER THESE DATES**

*JUNE 12-14:* National Meeting of Superintendents Assn., Lake Placid Club, Lake Placid, N. Y.

*JUNE 13-15:* Summer Meeting Tech. Section, Canadian Pulp and Paper Assn., Manor Richelieu, Murray Bay, Que.

*JULY 9-20:* Fifth Statistical Conference co-sponsored by TAPPI and Tech. Sec., Canadian Pulp and Paper Assn., Queens University, Kingston, Ont.

*SEPT. 11-13:* Seventh Testing Conference, Hotel Loraine, Madison, Wis.

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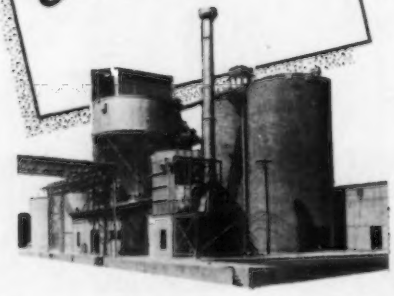

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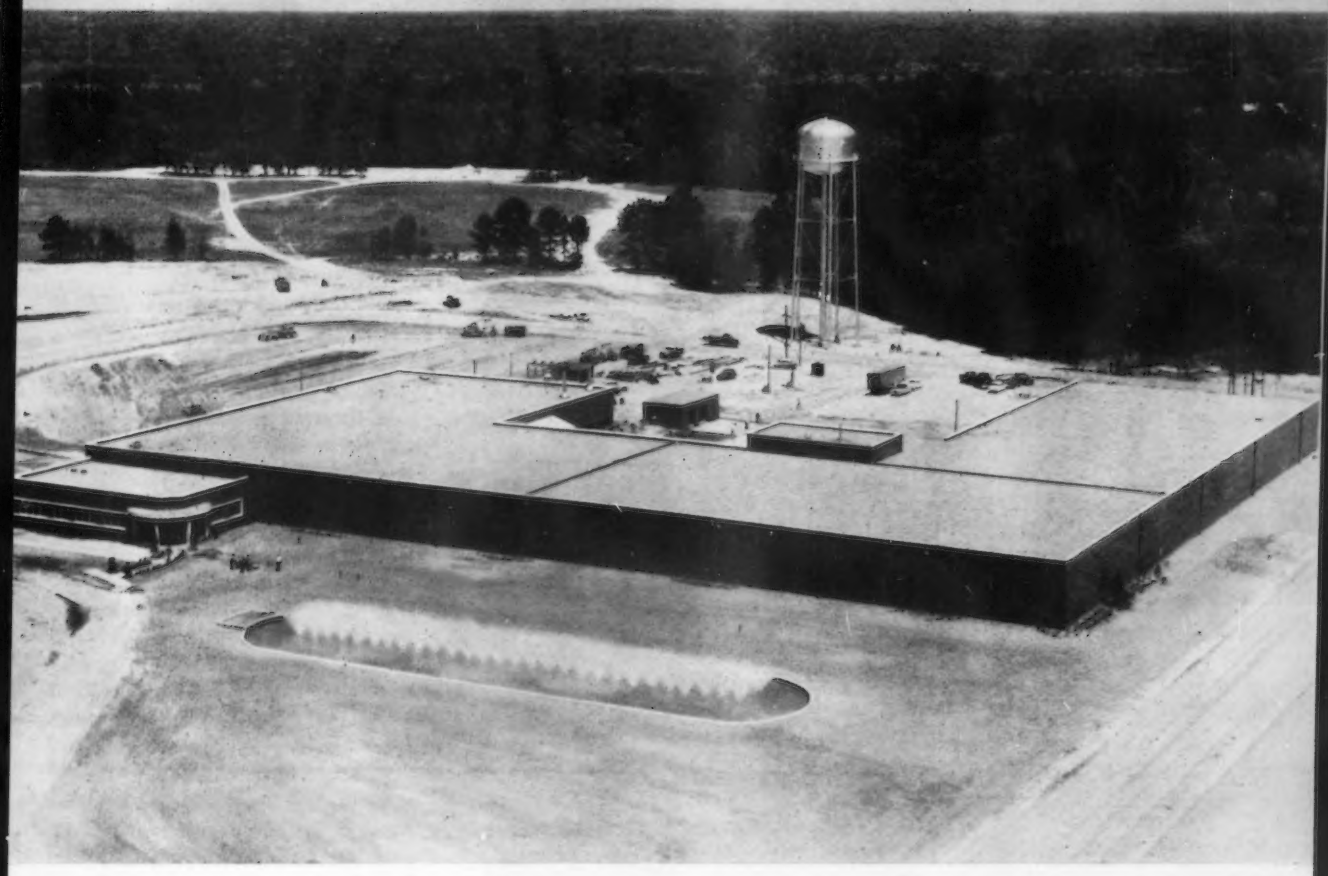


# ALBANY FELT COMPANY OPENS THE FIRST COMPLETE PAPER MACHINE FELT PLANT IN SOUTH AT ST. STEPHEN, SOUTH CAROLINA

The opening of the new Albany Felt Company plant at St. Stephen, South Carolina, is a tribute to the meteoric rise of the paper industry in the South and the steady upsurge of paper production throughout the country.

The new St. Stephen plant will be the first in the South equipped to perform the complete process of manufacturing paper machine felts, from the blending of wools through carding, spinning, weaving, joining and finishing. Located strategically to provide faster and more efficient service to Southern and Southwestern paper mills, it will also improve service to other sections of the country by increasing the company's productive capacity approximately 20% and lessening the work load at the main plant in Albany, N. Y.

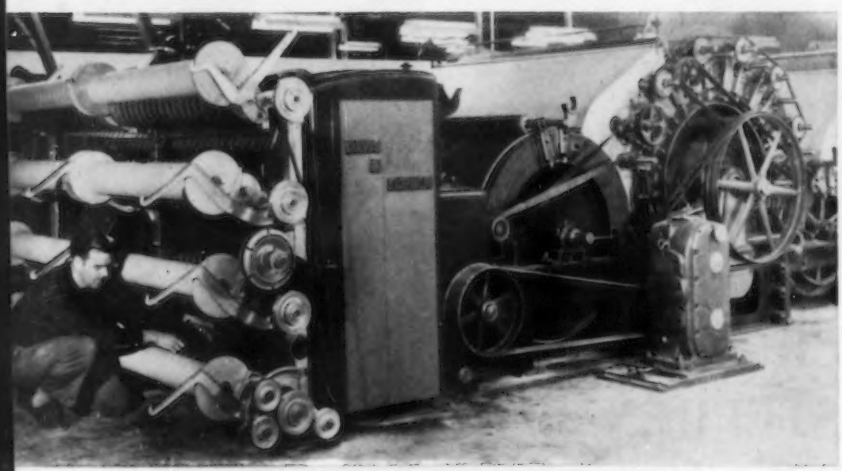
Ground was broken for the new plant on December 1, 1955, by the Daniel Construction Company of Greenville, S. C. Less than four months later, on March 29, 1956, the first machine whirred into its trial startup. This record-breaking speed of construction, achieved under the supervision of Albany Felt Company engineer Ralph Wood, will permit the St. Stephen plant to go into production exactly on schedule. By the time the official opening ceremonies are held, on May 12, 1956, all phases of the felt manufacturing process will be in operation.

Additional new machinery is scheduled for delivery after the official opening of the plant and, accordingly, an open house for paper mill superintendents is planned for October. This will coincide with the annual joint meeting of the Southern and Southeastern Di-

Entrance to the office section of the new Albany Felt Company plant at St. Stephen.

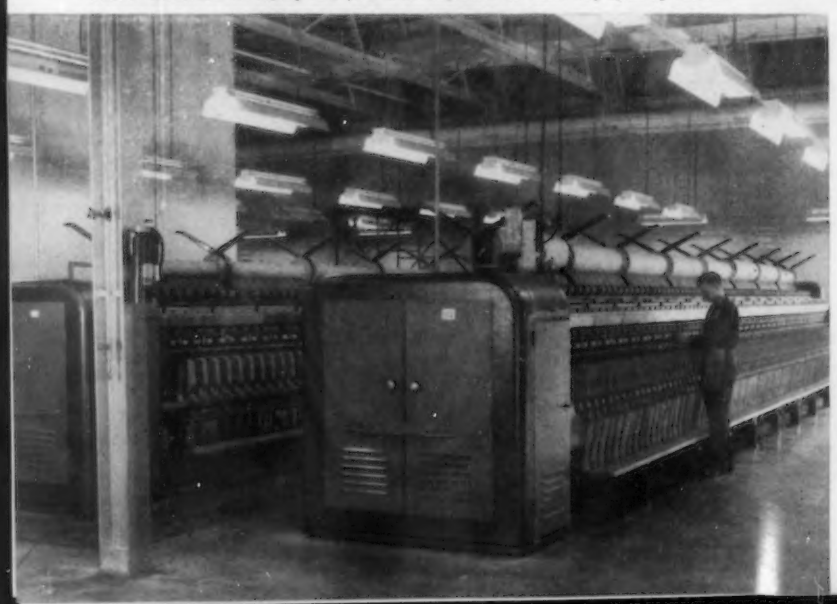
(ADVERTISEMENT)

Over 100 combinations of wool types and grades, plus a variety of synthetics, will be processed in this new picker and blender.



*Above:* The carding operation, first to start up at the new plant, prepares wool for spinning into yarn.

*Below:* Conversion of roping into yarn is accomplished on these ring spinning frames.



visions of The American Pulp and Paper Mill Superintendents Association in Charleston, S. C. Visiting papermakers will have the opportunity of inspecting the most advanced felt-making plant in existence, in full production.

## Most Modern Plant Design and Equipment

The new Albany Felt Company plant, constructed and equipped at an estimated total cost of $2,500,000, is located on an attractive 117-acre site on the outskirts of the town of St. Stephen, between Lake Moultrie and the Santee River, 45 miles from historic Charleston. Typical of the most modern Southern industrial plants, the main building is of simple, one-story construction, designed for efficient in-line production. Built entirely without windows, the new plant is illuminated by the latest type of lighting system with 1100 fluorescent lamps. It has 100,000 square feet of floor space and is air-conditioned throughout. The St. Stephen plant is a model of design and planning for effective use of working areas and for ideal working conditions for employees.

With power from South Carolina Public Service Authority brought into the mill at 13,200 volts, the new plant utilizes some of the newest and most revolutionary textile machinery ever made. This includes an improved blending unit, super picker; two new 84-inch Davis & Furber carding machines; four new large package Davis & Furber ring spinning frames; two Whitin-Schweiter automatic rewinders; a large warp-dresser with compressor; a new design in spoolers, seven huge Crompton & Knowles looms, 250 to 600-inch widths; two specially designed stainless steel rotary fulling mills; a new 108-inch basket extractor; a special stainless steel washer; a special rotary teazel napping machine; the world's largest felt dryer, with 360-inch face; a 360-inch singeing burner, the widest in the industry; and many additional items.

The mill cooling pond constructed in front of the main entrance has a 250,000 gallon capacity and is equipped with a shower system which will cool and aerate 1200 gallons per min-

ute. The water supply of the mill is drawn from a 1223-foot well with a capacity of nearly 300 gallons per minute. The tank on the 130-foot water tower, with its 200,000 gallon capacity, completes the system.

## Employees for New Plant from Immediate Area

Seven key employees were transferred from other Albany Felt plants to serve as nucleus of the new staff being assembled at St. Stephen, while eight other regular Albany personnel will be located temporarily at the new plant during the training program. It is anticipated that more than 150 workers will be employed when the plant reaches full production, most of them from the immediate area.

Robert Sloan has been appointed plant manager at St. Stephen and Charles Michaels has assumed the position of plant superintendent. Mr. Sloan was formerly Chief Industrial Engineer for all of the Albany Felt plants and has been with the firm since 1950.

A graduate of Lowell Technological Institute, he served for two years in the United States Navy during World War II and has held several positions in the manufacturing departments at Albany prior to assignment to this new post.

Charles Michaels is also a Lowell graduate and has held a variety of positions in manufacturing departments since joining the firm's staff in 1952. Formerly superintendent of yarn manufacturing at the Albany, N. Y., plant, Mr. Michaels served three years with the U. S. Air Force.

## New Plant Marks Milestone in Albany Felt Company History

The St. Stephen plant is the fifth to join the company's network of manufacturing locations, and the first to operate south of the main plant in Albany, N. Y. Founded in March, 1895, the Albany Felt Company has enjoyed a constant growth since that time to its present position of the largest maker of paper machine felts in the world.

Originally located in a leased building, the present location of the main plant was purchased in 1902, with a number of additions in the following

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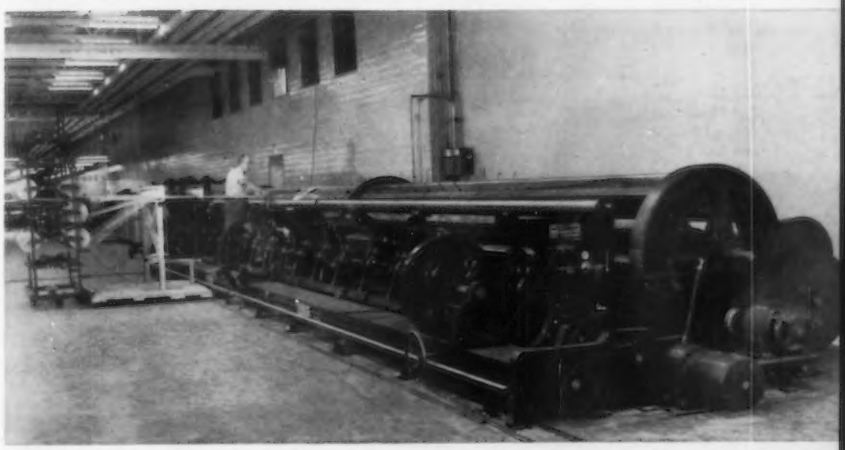
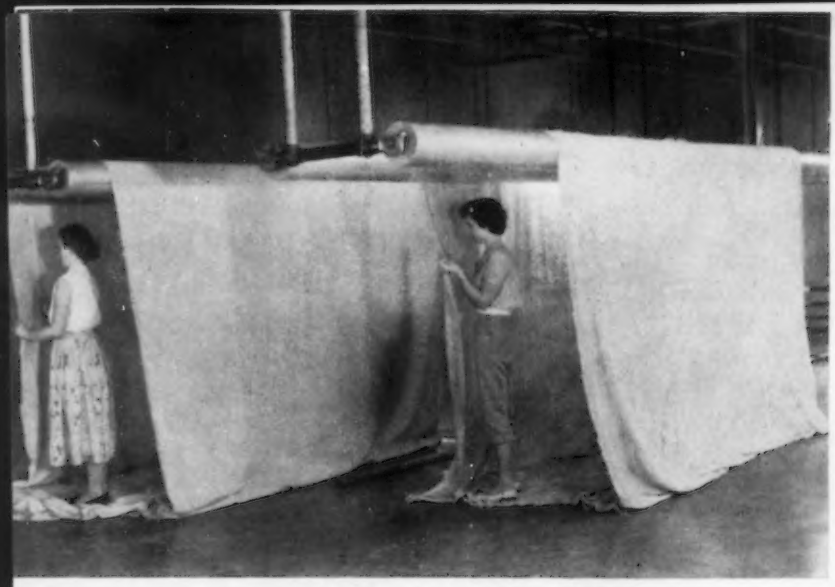
On this winding machine filling yarns are transferred to smaller bobbins which fit the loom shuttles.



*Above:* This dressing operation consists of winding the warp yarns on the large reel, then rewinding on a loom beam in preparation for weaving.

*Below:* This mammoth 600-inch loom, largest to operate in the South, is one of seven new looms installed in the weaving section.



The burling operation consists of a careful scrutiny of every area of the woven felt and correction of minor weaving defects.

*Above:* In the delicate joining process, nimble-fingered workers join felts that are too long or fine to be woven endless, performing this task so skillfully that only an expert can locate the joined area.

*Below:* In the "fulling" process the felt is thickened and compacted in machines such as this kicker.

years bringing it to today's size, with floor space equivalent to ten acres of ground and a payroll of more than 1200.

In 1946, the expansion program had exhausted the potential of the Albany site and two new mills were acquired, in Hoosick Falls, N. Y., and North Monmouth, Maine. After this, the increased demands for Albany felts in Canada, Latin America and other parts of the world resulted in the creation of Albany Felt Company of Canada, Ltd. A modern one-story plant was constructed to house this organization in Cowansville, Quebec, which started production in 1952. Since then, one addition has already been made. The total number of people employed by the company is now over 1700.

## Many Contributions Made by Albany to Paper Industry

As the company expanded, its technological advancement kept pace with its growth. Early in the 20's, Albany Felt introduced the new concept of custom-design of each felt for a specific position on each paper machine; a radical departure from the policy of stock styles then used throughout the industry. This innovation gave papermakers a tremendous benefit in improved felt performance and life which naturally resulted in more efficient paper production. In the years that followed, this idea was adopted by the entire feltmaking industry and is universally practiced today.

At the same time, the demand for ever-increasing sizes and varieties of felts led the company to develop important mechanical improvements for the spinning machines, looms and fulling equipment, since most available textile machinery was not large enough and could not give the close tolerance required for feltmaking.

This era also marked the development of modern laboratory services and quality controls at the Albany plant. The company developed a series of approximately 120 laboratory-controlled quality check points which have since been further expanded, resulting in a uniformity of felt manufacture hitherto unknown.

The new laboratory services led directly to the continuing research pro-

gram existing today, consisting of both chemical and mechanical research laboratories. Albany Felt Company also sponsors a fellowship in one of America's leading research institutes. This activity has been responsible for major contributions to improved felt performance and paper machine operation. Among these was the development of many chemical treatments for felts which have helped extend felt life, improve porosity and resist bacterial action.

## Synthetic Content Felts Introduced

Another vital development was that of synthetic-content felts, pioneered by Albany research technicians in the late 30's and early 40's. Granted a patent covering the use of synthetics in paper machine felts in 1947, the company made this important advancement available to all feltmakers, to permit its full utilization by the entire paper industry. Since the first experiments with synthetic-content felts, the Albany research team has tested virtually every synthetic fiber in existence, to determine possible values. Today, roughly 40% of the felts contain moderate amounts of such fibers where specifically required by machine operating conditions; but the use of all-wool felts is still predominant.

## Many Other Industrial Fabrics Produced by Albany Felt Company

Since 1920, in addition to paper machine felts, a wide range of related products has been developed. For example, production of compressive shrinking blankets for use in the process widely known as Sanforizing was instituted, and many other special industrial fabrics, many embodying synthetics, were added to the company's output. Today these items number in the hundreds, including a wide variety of fabrics for use in wet and dry filtration, specialized conveying, and finishing processes for every type of industry.

None of these fabrics will be produced at St. Stephen for the present. While Industrial Fabrics constitute an

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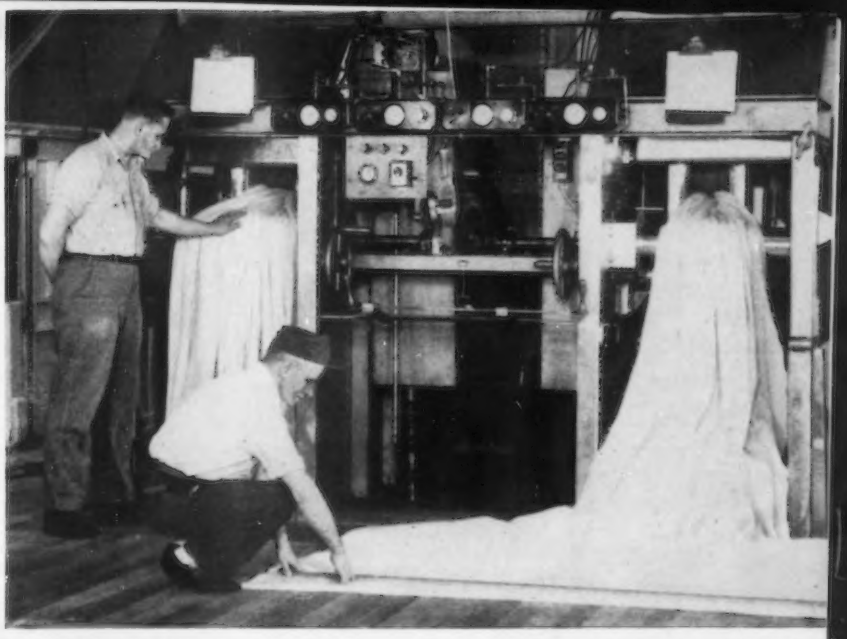


Fulling to size is done in this rotary fulling mill which mechanically interlocks fibers to cause felting.

*Above:* This modern washing machine at St. Stephen thoroughly cleans felts in preparation for the final finishing operations.

*Below:* This new 108-inch extractor works similarly to the spin-dryer in a home washer, removing water to facilitate faster drying.

Albany Felt Company's executive team plans St. Stephen opening. Left to right: Executive Vice President John C. Standish, Secretary and Assistant to the President Albert C. Cramer, St. Stephen Plant Manager Robert Sloan, President Lewis R. Parker, Sales Manager James E. Smith, Vice President in Charge of Research and Development Harold F. Hedberg, and Vice President-Sales Wayne G. Davis.

important percentage of Albany Felt Company's total volume, the paper machine felts make up a far greater part of the company's production. Together, however, the combination of all products has made the company the largest single producer of specialized industrial fabrics in this hemisphere, if not in the world; with the St. Stephen plant permitting even greater capacity.

## Future Plans Reflect Confidence in Growth of the Paper Industry

With the opening of the St. Stephen plant, Albany Felt Company brings to the paper industry the most efficient and modern facilities for the production of paper machine felts in the world today.

Design of the main building at St. Stephen has been made with future expansion in mind, and additional wings can be built at any time with

The main plant and offices of Albany Felt Company located at Albany, New York, within a stone's throw of the historic Hudson River.

relatively simple construction involved and without interfering with production flow. This follows the pattern of the new plant at Cowansville, Quebec, where similar planning has resulted in one addition and allows for considerably more in years to come.

And, already underway in the research and engineering departments of the company are plans for further development and expansion. Albany Felt Company has indicated a willingness to consider the establishment of new plants in any areas which might require them, as capacities of present plants are reached. This feeling is representative of the complete confidence which the company has shown throughout its history in the continued growth of the paper industry. Accelerated by the constantly expanding use of paper, paperboard and related products, substantial yearly increase in felt production is foreseen.

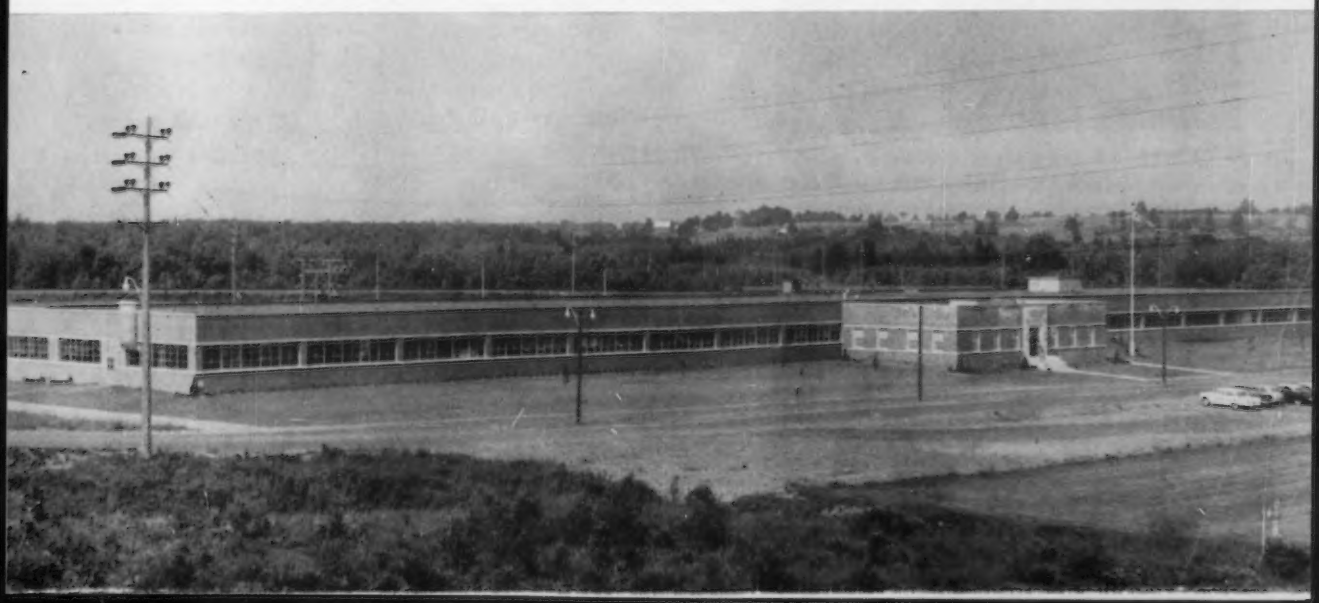
This, despite the fact that improved felt design, synthetics and treatments are all combined to give longer and more efficient felt life, permitting the paper industry to produce "more saleable tons per day" with the Albany felts used on their machines.

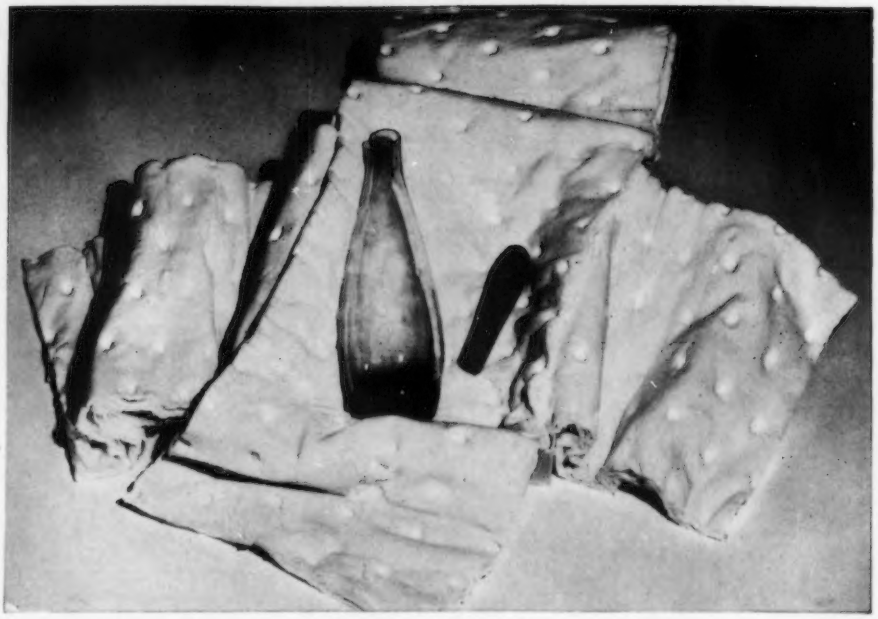
Albany Felt Company opens the doors to America's newest feltmaking plant in St. Stephen, S. C., with the assurance that it will take its place in contributing to better papermaking through better felts.

*Above:* This plant at Hoosick Falls, New York, is operated as a division of the Albany plant.

*Below:* The Albany Felt Company plant at North Monmouth, Maine, devotes its production exclusively to industrial fabrics other than paper machine felts.

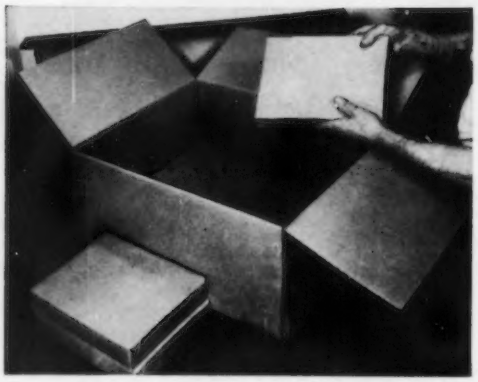
*Below:* Built in 1952, this modern plant is the home of Albany Felt Company of Canada, Ltd., located in Cowansville, Quebec, about forty miles southeast of Montreal.





**REPELLENT WADDING**—The unique characteristics of Aquapel make it ideal for sizing grades like cellulosic cushioning materials, which have formerly presented difficult problems. A new concept in sizing, Aquapel reacts chemically with cellulose fibers to form a surface that is resistant to the penetration of water, acid, and alkali.

# AQUAPEL® SOLVES THE TOUGHEST SIZING PROBLEMS



**JUTE LINERS**—Efficient sizing of alkaline jute liners for corrugated boxes has always been difficult to obtain. Now Aquapel makes it easy without sacrificing strength. A small amount of Aquapel provides a degree of resistance to moisture that keeps boxes looking better longer.

Impossible to size? If you haven't tried Aquapel, you haven't tried the new concept in sizing that makes the difficult look easy.

There are many good reasons for the Aquapel difference. To begin with, Aquapel is not just "another sizing agent." Neither resin nor wax, Aquapel is a chemical compound that becomes an integral part of the fiber. It is never just "stuck on."

Applied on the surface, Aquapel is also a lot more than a surface size in the usual sense. Any equipment commonly used for the surface treatment of paper can be used to apply Aquapel. And it takes only a little Aquapel to make a big difference.

If you haven't tried Aquapel, write Hercules for a sample and descriptive literature.

*Paper Makers Chemical Department*

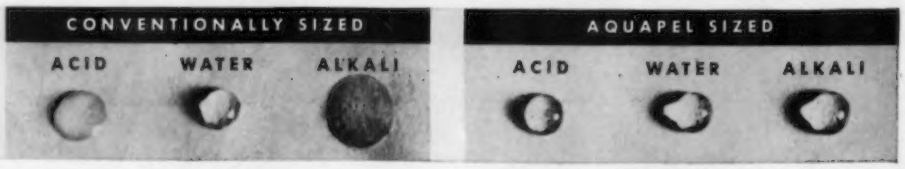
*HERCULES POWDER COMPANY*

INCORPORATED

*962 King Street, Wilmington 99, Del.*

PP56-2

**AQUAPEL®**
**makes the difference**



# MORE THAN 300 LEADING MANUFACTURERS

**are already putting**

# SKF TYPE "C" BEARINGS

**in their products**

Here are the trade marks of a few of more than 300 leading manufacturers – companies who want extra bearing performance – who already are using the *improved* SKF Type "C" Spherical Roller Bearing announced less than a year ago.

There are two reasons why

First: They know that for over 40 years, SKF has been *first* with anti-friction developments that *work*.

Second: They obtain, size for size, up to 50% more capacity, 2 to 3½ times increased life with SKF's Type "C" Spherical than they can obtain with any other available design, and at no increase in cost.

7550

**SKF INDUSTRIES, INC.**, PHILADELPHIA 32, PA.
– *manufacturers of* **SKF** *and* HESS-BRIGHT® *bearings.*

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**SKF®**

**BALL AND ROLLER BEARINGS**

# Simple Arithmetic...

Type 302, Sheet Base Price 44.50 cents per lb.

Type 430, Sheet Base Price -34.50 cents per lb.

Saving 10.00 cents per lb.

**in Stainless SHEET Costs!**

## Now You Can SAVE $200 Per Ton!

Many designers and fabricators who are currently using Type 302 stainless can, in numerous applications, specify Type 430 straight chromium stainless and take advantage of the 10 cents per pound difference in base price. Some of our customers are already saving more than $200 per ton using our 430 MicroRold stainless sheet.

The steel industry estimates that 50% of all stainless sheet applications could satisfactorily employ Type 430, the least expensive of all stainless grades, as an economical and practical material. When properly applied, Type 430 has all the desirable qualities of beauty, corrosion resistance, strength, long life and low maintenance that no other material, except stainless, can offer.

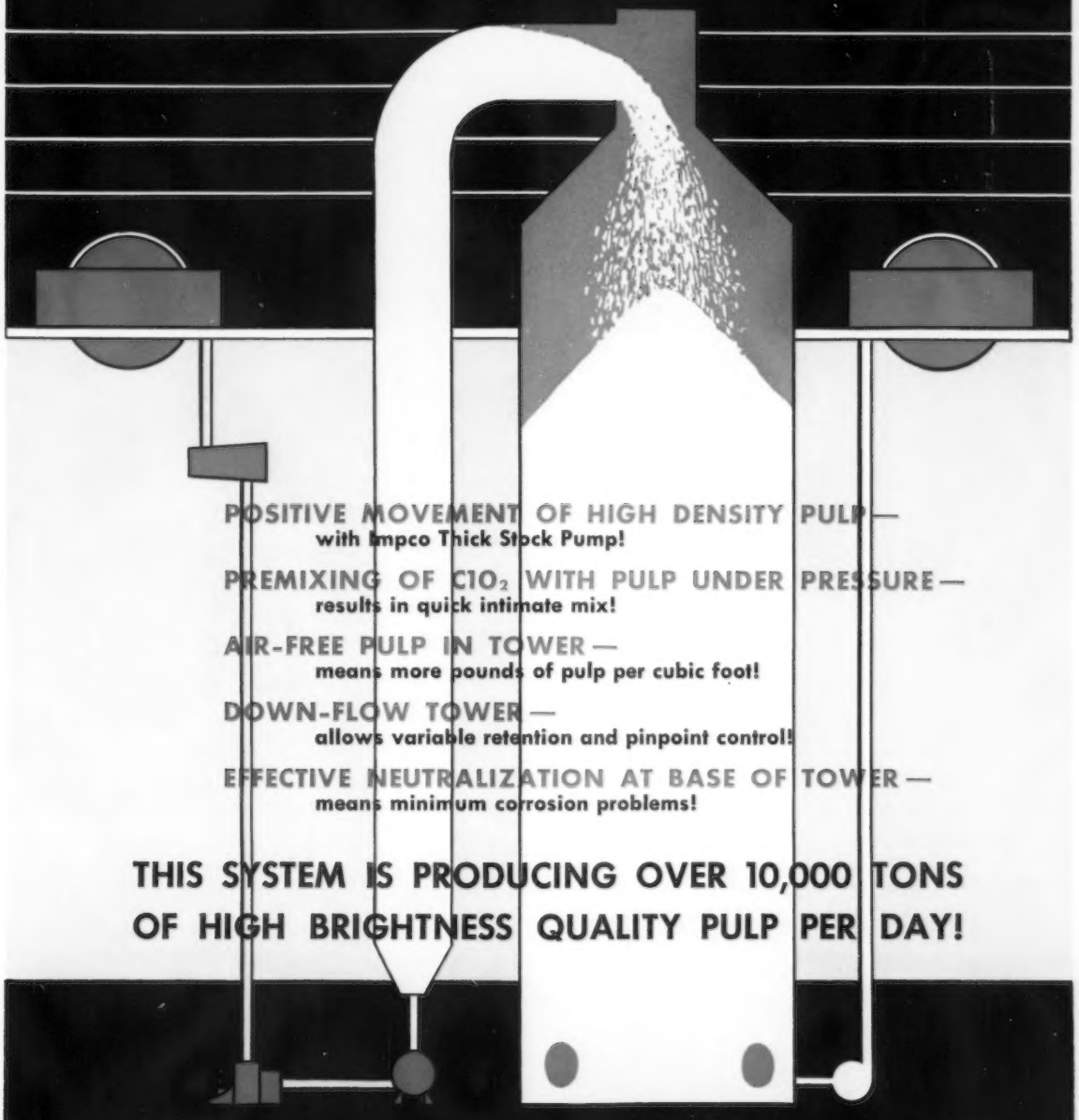
**We are currently producing our MicroRold Type 430 sheets in thicknesses .005″ to .109″ with 2B or 2D finishes; and in thicknesses .010″ to .109″ in No. 3, 4 and 7 finishes.**

*Send for Your copy, "Care and Use of 430 MicroRold Stainless Steel"*

**Washington Steel** *Corporation*

**5-CC WOODLAND AVENUE, WASHINGTON, PA.**

# Impco chlorine dioxide bleach system



**POSITIVE MOVEMENT OF HIGH DENSITY PULP —**
with Impco Thick Stock Pump!

**PREMIXING OF $ClO_2$ WITH PULP UNDER PRESSURE —**
results in quick intimate mix!

**AIR-FREE PULP IN TOWER —**
means more pounds of pulp per cubic foot!

**DOWN-FLOW TOWER —**
allows variable retention and pinpoint control!

**EFFECTIVE NEUTRALIZATION AT BASE OF TOWER —**
means minimum corrosion problems!

**THIS SYSTEM IS PRODUCING OVER 10,000 TONS OF HIGH BRIGHTNESS QUALITY PULP PER DAY!**

IMPCO®

**IMPROVED MACHINERY, INC.**
**NASHUA · NEW HAMPSHIRE**

Sherbrooke Machineries Limited, Sherbrooke, Quebec manufacture similar equipment in Canada

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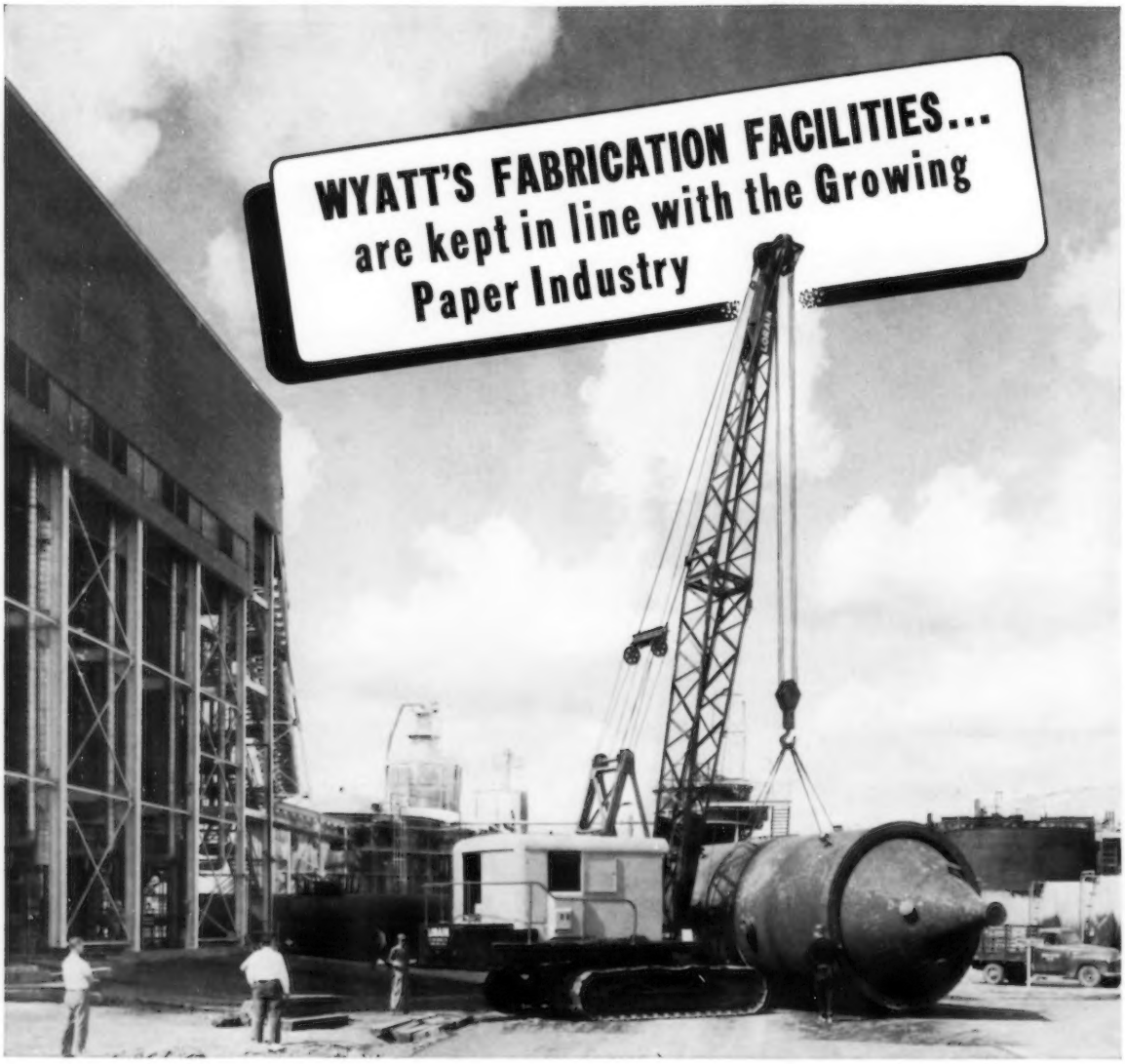
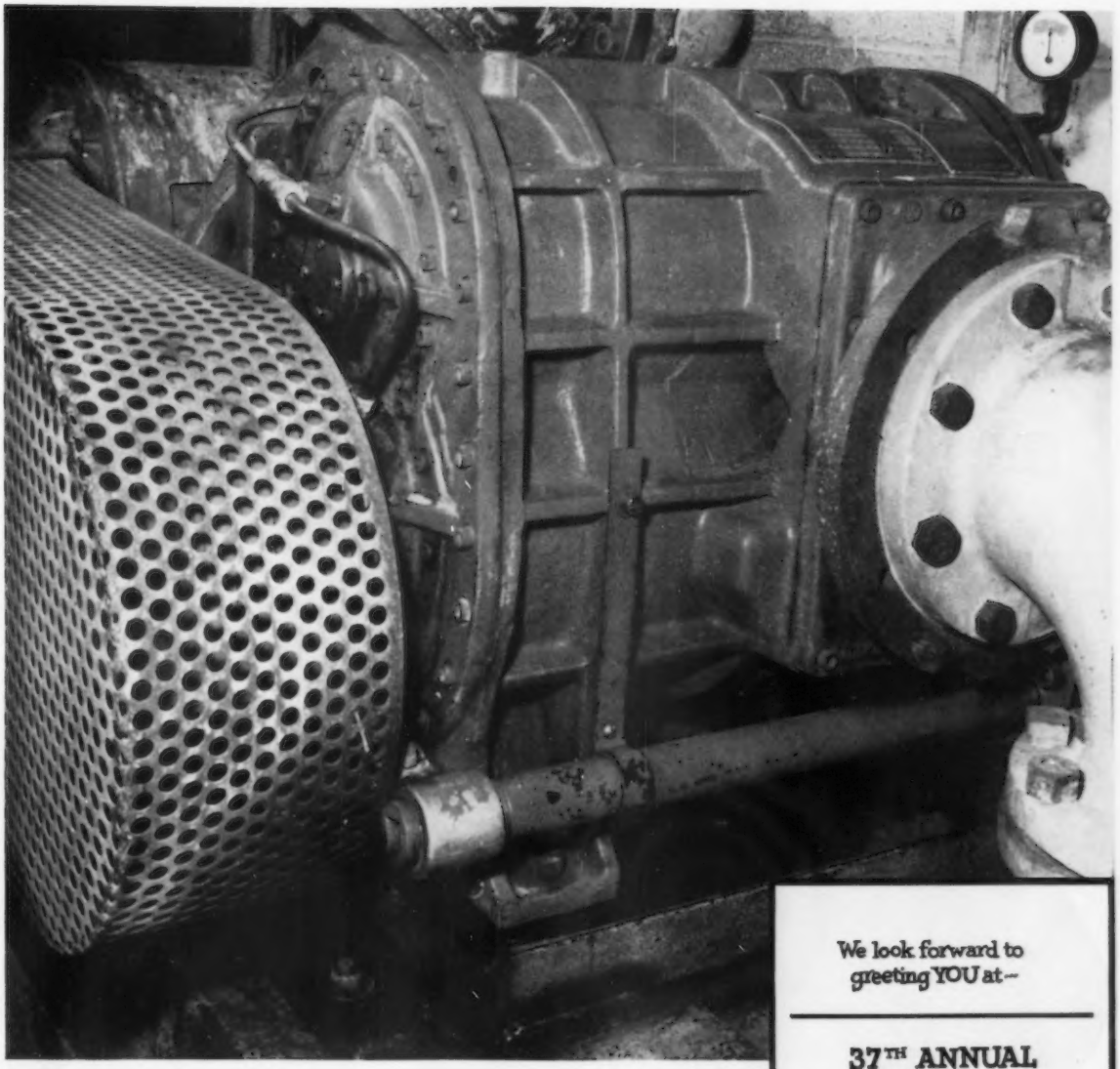



**Here One of Wyatt's Digesters is Headed for Its Place in the Expansion that will make the Calhoun, Tennessee Mills of Bowaters Southern Paper Corporation the Largest Newsprint Manufacturer in the South.**

# WYATT
## METAL & BOILER WORKS
**DALLAS • HOUSTON**

wyatt's
HOUSTON-DALLAS-NEW YORK-TULSA

**FABRICATORS AND ERECTORS SINCE 1913**



# *Standardaire* pump solves drying and foaming problems . . . cuts maintenance for specialty paper producer

Uneven drying and heavy foaming problems resulting from vacuum fluctuations presented serious obstacles to Raybestos-Manhattan, Inc., in the production of its new, single-fiber asbestos paper.

A Standardaire vacuum pump, installed originally on a 4-month trial basis, entirely eliminated these difficulties. The unit, requiring only half of the area of the former pump, provided a constant vacuum, making possible an uninterrupted flow between the pulp vat and the final windup drum.

Now, after nearly four years of operation, often in excess of rated capacity, this unit still is in prime condition. No maintenance has been required other than lubrication at 3-month intervals.

The compact Standardaire offers greater capacity per pound of pump, with less power consumption, than other units of equal size and weight. Find out how they can help solve your problems. Write for your copy of illustrated bulletin B-154 which provides specifications and operating data.

We look forward to greeting YOU at—

**37TH ANNUAL CONVENTION**

AMERICAN
PULP and PAPER MILL
SUPERINTENDENTS
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**JUNE 12 to 14**
**LAKE PLACID CLUB**
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**BLOWER-STOKER DIVISION**
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**New York 17, New York**

# Automatic® DYNAMOTIVE

## Brings New Efficiency To Materials Handling In The Paper Industry

**ELECTRIC-DRIVEN GAS POWERED FORK TRUCK**

●

**4,000 LBS. TO 10,000 LBS. CAPACITIES**

●

DYNAMOTIVE illustrated with paper roll clamp attachment. Hydraulic revolving device rotates 360°, handling rolls vertically or horizontally.

The new DYNAMOTIVE combines the best features of both electric and gas driven trucks. Constant full electrical power is available on demand by means of a heavy duty efficient generator powered by a gasoline engine. Fuel consumption is much less than straight gasoline operated trucks in comparable service. Integral design of both power mediums has developed an efficient operating unit using no mechanical transmission.

To name only a few of many other DYNAMOTIVE advantages; Power flow is infinitely smooth, infinitely variable; no gears to shift—no clutch to manipulate; no mechanical connection between engine and drive unit; engine speed automatically adjusts to load requirement; minimum engine wear—maximum life; minimum down time—maximum accessibility.

DYNAMOTIVES are now available with a wide variety of attachments to meet specialized requirements as well as the conventional fork lift. Silicone wound class H motor and generator, heavy section rolled manganese alloy steel uprights. Many other equally important features. Why not get the whole DYNAMOTIVE story?

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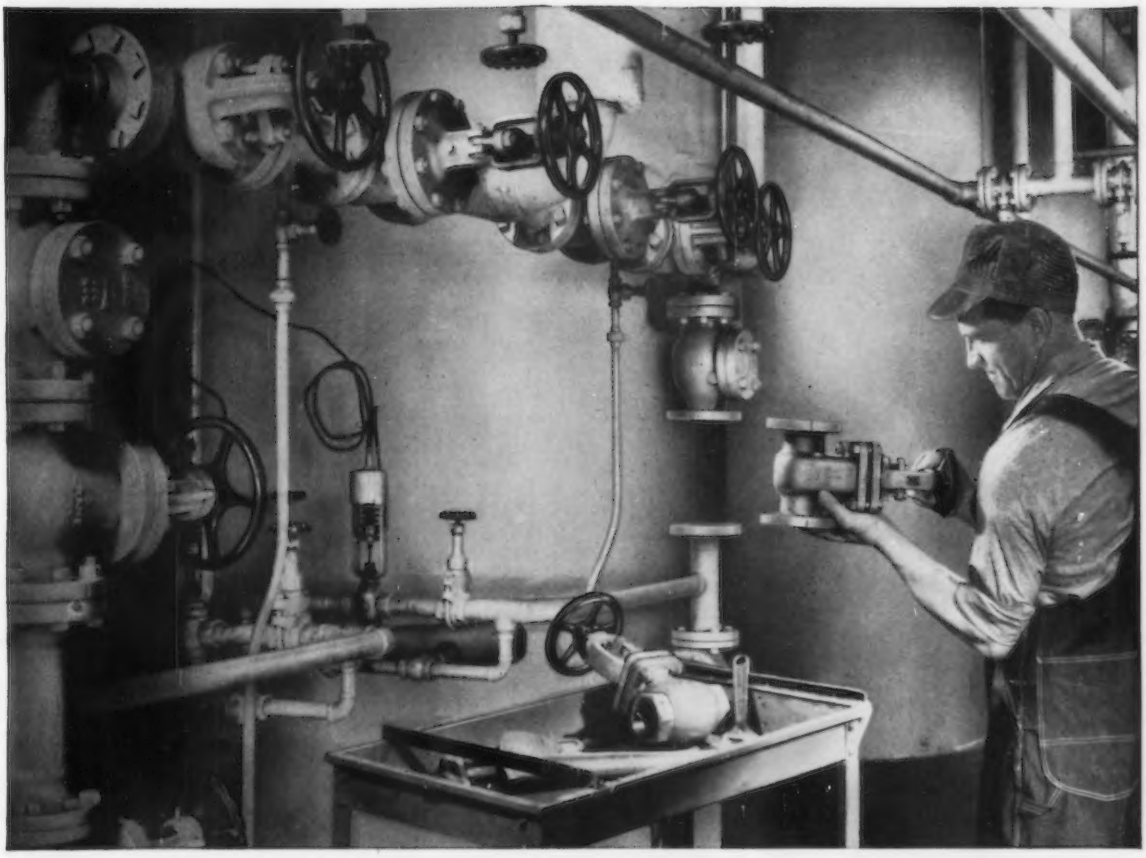


# Corrosion meets match in Crane 18-8 SMo and Craneloy 20 valves

*It's unanimous!* These Crane valves for the process industries were *especially designed* of Crane alloys to cope with costly corrosion and to cut replacement costs.

*The gate valves* feature a simple, split-wedge disc construction which permits discs to rotate freely within guides and to seat tightly at all points on the seat perimeter. The free movement of the disc, plus uniform seating and unseating loads, minimizes galling and seizing, reduces wear and allows smooth operation under all conditions.

*Globe and angle valves* now feature a modified plug-type disc that combines the advantages of the easier seating of the narrow ball-to-flat seat and the high resistance of the wider plug-type disc to corrosion, erosion and cutting. In addition, these valves offer a new swivel disc-stem connection that seats the disc squarely every time. Minimum clearance eliminates vibration.

These valves are available in 18-8 SMo and Craneloy 20 . . . in gate, globe, angle and check patterns . . . ½" to 6" . . . screwed or flanged ends. Rated 150 p.s.i. at 500° F.—230 p.s.i. at 100° F. *For more detailed information*, confer with your CRANE representative or write to the address below for the 12-page circular AD-2080.

Split-wedge disc gate.

Swivel disc globe.

Crane trunnion-mounted split-wedge disc combines the benefits of free rotation with uniform seat load pressure.

New swivel disc stem connection in globe and angle valves permits the disc to swivel freely on contact with seating surfaces.

# CRANE VALVES & FITTINGS

**PIPE • KITCHENS • PLUMBING • HEATING**

*Since 1855—Crane Co., General Offices: Chicago 5, Ill. Branches and Wholesalers Serving All Areas*

*Especially for paper reinforcements . . .*

## *Pittsburgh Fiber Glass*

Pittsburgh's newest reinforcing fiber glass yarn is tailor-made for paper products. This PPG 7115 yarn provides smoother manufacturing, lower fuzz for such reinforced paper products as laminated sheets, manufacturer's joint tape and pressure sensitive tape.

Important too, Pittsburgh Fiber Glass Yarn reinforcements give better flexibility to finished sheets than any other type of reinforcements.

For complete information on the complete line of PPG Fiber Glass reinforcements, and arrangements for "in your plant" tests, contact our executive offices or our district sales offices in Chicago, Cincinnati, Cleveland, Detroit, Houston, Los Angeles, New York, Philadelphia or St. Louis. Pittsburgh Plate Glass Company, Fiber Glass Division, One Gateway Center, Pittsburgh 22, Pennsylvania.

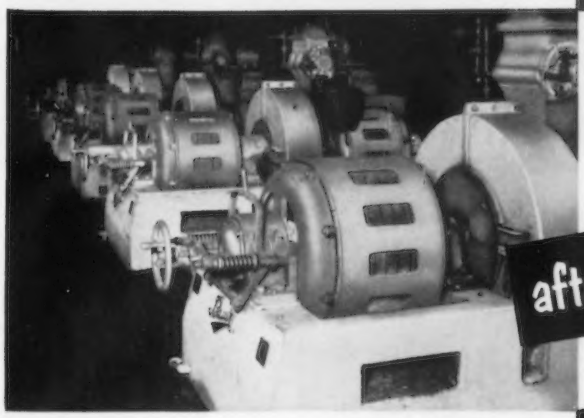
FIBER PPG GLASS

PAINTS · GLASS · CHEMICALS · BRUSHES · PLASTICS

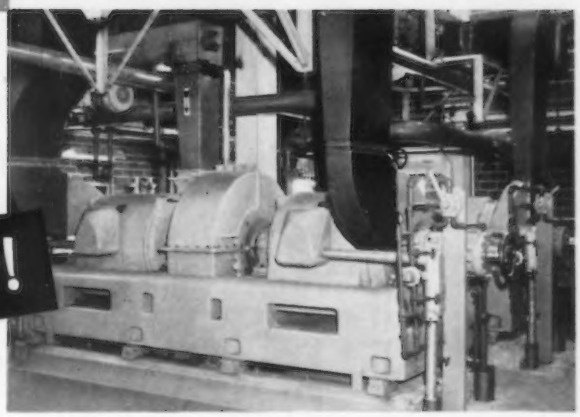
PITTSBURGH PLATE GLASS COMPANY

# The Rapid Trend Toward
## Bauer Double-Disc Refiners for Semi-Chemical Pulp

one mill . . .



after another . . .



after another!

To get the best job of fiberization, high speed is right. And a Bauer Double Revolving Disc Refiner has it—2400 differential rpm between the rotating heads. Bauer double-disc refiners have no stationary plate to cut fibers. A Bauer will produce high quality semi-chemical pulp with less chop, better testing qualities, and better formation on the machine.

We're not prejudiced toward double-disc either, because we make the best and most modern pressure and free discharge single-disc mills offered to the industry.

Write, wire, or phone us for more detailed information on Bauer Refiners.

Bauer

**THE BAUER BROS. COMPANY**

***DISC REFINER HEADQUARTERS***

1758 Sheridan Ave. • Springfield, Ohio

*One of a series showing how Stowe-Woodward's better quality control results in better papermaking rolls*

## *Measuring the Resin in Rubber*

### *to make* BETTER *RUBBER COVERED ROLLS*

Even the highest grade of raw rubber varies from lot to lot. Its quality is influenced by such factors as the growth season, rainfall, and soil conditions . . . not to mention care in its handling.

To insure uniform high standards of quality within the best grade that can be purchased, Stowe-Woodward carries on a continuing program of chemical analysis of each shipment of rubber accepted.

It is another step in Stowe-Woodward's better quality control which results in:

***"RUBBER ROLLS with a REPUTATION"***

S-W INC.

**STOWE-WOODWARD, Inc.**

*Craftsmen in rubber rolls*

NEENAH, WISCONSIN • NEWTON 64, MASS. • GRIFFIN, GEORGIA

**Market Pulp Termed Easier**

A slight easing of market wood pulp supplies is currently being experienced in the U.S. Partial cause is the slackening of heavy consumer order backlogs. Also, exports are down due to higher prices at home, and imports, from both Canada and Europe, are up. Receipts from the latter source reflect the greatly improved inventory position of European consumers. Reports of spot offerings are again noted in the American market, which include supplies of good quality bleached kraft pulp. The export decline in the first quarter amounted to 40.7 per cent.

**Court Rulings Made Public**

Recent legal activity, involving labor organizations, brought forth a ruling which allows management to prohibit organizing activity on company property. Another decision, issued earlier, told management that if it refused to allow a pay increase for its workers on the grounds that it couldn't afford one, the union could take a look at the company's books.

**New Box Trend Noted**

The "most significant change in modern packaging," according to Joseph H. Torras, assistant sales manager for the St. Regis Paper Co., "is the use of fine papers in package production." This new use, which Mr. Torras predicted might be a growing trend, is the lamination of pre-printed paper to cheap paperboard. Mr. Torras suggests that the new technique may eventually displace the need for coating heavy materials such as box boards.

**Scott's Bright Future**

Representing the kind of optimism most paper makers entertain today, Scott Paper's president, Thomas B. McCabe, told stockholders that Scott sales will more than double or hit a peak of $500 million in the next five years. In anticipation of the rising demand for its products, the company has launched the largest capital spending program in its history for expansion and improvements.

**Synthetic Fiber Interest Up**

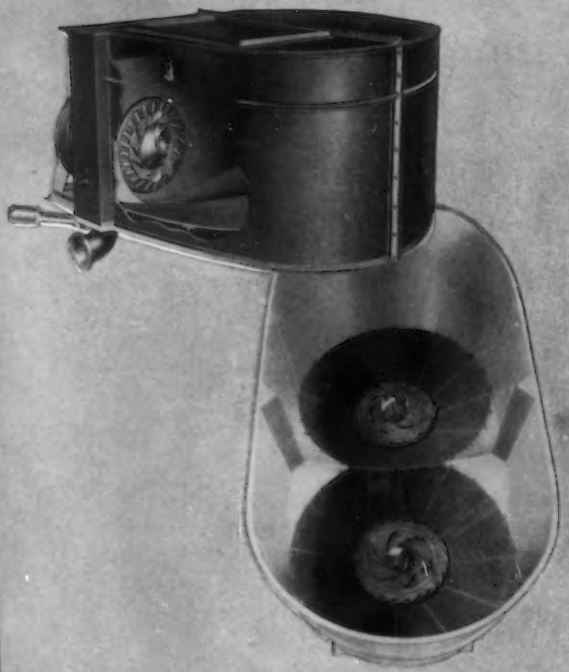
Interest in synthetic fibers for papermaking is growing among our companies. We are regularly receiving reports of experiments in this field by a number of companies.

**Folding Boxes Set New Peak**

First quarter shipments of folding boxes hit new peaks, with the value of supplies placed at $112,060,278, or 11.3 per cent above the same period of last year. March folding box orders were 19.3 per cent over those for the similar month in 1955.

**Set-Up Boxes Maintain Fast Pace**

Set-up box demand is brisk and current output has maintained a consistent lead over last year's levels. Total billings for the first quarter were 8.8 per cent in front of dollar figures for the first three months in 1955. Bookings for the month of March were only slightly above those for the same month a year ago, however.



# This is BLACK-CLAWSON

## ...still the leader in pulper sales and experience

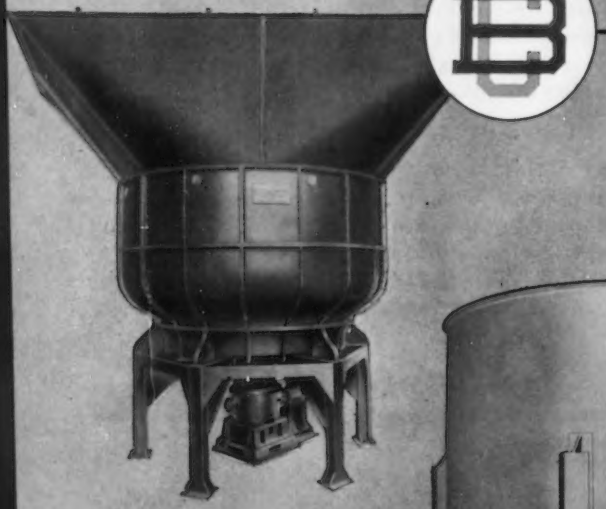
Right now the Shartle Division has an order backlog for over 56 Hydrapulpers®. Add this to the over 1500 in service all over the world and you have convincing evidence that Shartle and the Hydrapulper still lead the field in pulper building experience and sales.

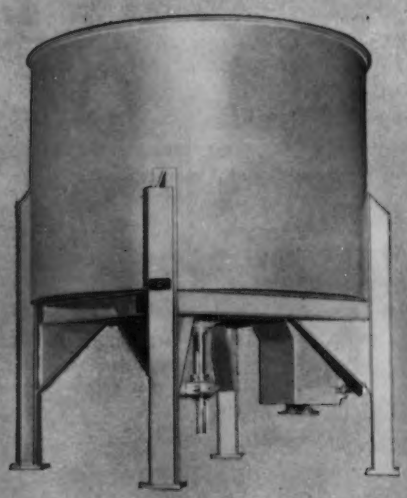
From the complete line of Shartle Hydrapulpers, Hydrabeaters, Duopulpers and broke pulpers, you can select a unit to meet your specific mill requirement... a pulper that will give you the exact degree of defiberization you need at less HP/T per day.

Rely on the unmatched experience and engineering skills of Black-Clawson. Contact the Shartle Division for full details on pulping, deinking, blending, mixing or broke pulping applications.

*The* **BLACK-CLAWSON** *Company*

**SHARTLE DIVISION • MIDDLETOWN, OHIO**





## May Be Site of New Bowater Mill

Officials of the Bowater Paper Co. have reported to Paper Trade JOURNAL that the company is making preliminary investigations of several sites in the U. S. South with the intention of eventually establishing another pulp and paper mill operation there. According to G. R. Koons, Industrial Relations Manager of Bowaters Southern Paper Corp., Calhoun, Tenn., a location near Rock Hill, S. C., is one of several being examined but the program is still in its early stages and many factors must be considered before the company is able to make any definite statement.

Rumor has it that the mill will cost approximately $50,000,000 and that it will employ a working force of between 2,000 and 2,500.

## Diamond Match Enters Foreign Production

The Diamond Match Co., according to its president, Robert G. Fairburn, has contracted to purchase for cash the 360,000 outstanding one £ par ordinary shares of Hartmann Fibre Co., Ltd., major British producer of molded pulp products. The price set for the stock is 75 shillings ($10.50) per share.

"The demand for molded pulp products," said Mr. Fairburn, "especially for the prepackaging of meats and produce sold in self-service food stores, is expanding rapidly. This acquisition of Hartmann Fibre, puts The Diamond Match Co. in a strategic position to participate in the expanding market for these packaging products in various areas overseas."

Diamond currently derives approximately one-third of its annual volume of $130 million from the sale of molded pulp products. It has molded pulp plants at Ogdensburg and Plattsburg. N. Y., Palmer, Mass., Morris, Ill., and Brantford, Ontario. A new plant is now under construction at Red Bluff, Calif. which is expected to begin production in late 1957.

### Plan Research Center

Consolidated Paper Corp., Ltd., plans to build a $1 million research center at Grand'Mere, Que., this year.

### Huss Co. Buys Ontonagon Mill of Nat'l Container

A Chicago lumber firm, Huss Lumber Co., has purchased from National Container Corp. the latters pulp and paperboard mill in Ontonagon, Mich. Title to the mill is held by a Huss Lumber affiliated corporation named Huss-Ontonagon Pulp & Paper Co. A. J. Huss is president of the Huss Lumber Co.

It is reported that the Huss management plans extensive revamping of the mill, including the installation of a new paper machine and the conversion of the existing kraft pulp mill to hardwood neutral semi-chemical pulping for the manufacture of corrugating medium.

New techniques are said to be specified for the new pulp mill.

### Plan $35,000,000 Tenn. Mill

W. O. Suggs, president of the newly formed Pulpwood Development Co., Inc. has announced plans for a $35 million pulp and paper mill at Fulton, Tenn. The type of paper to be manufactured has not yet been determined. Fulton is on the Mississippi about 35 miles north of Memphis.

### Container Corp. Now Owns 90% of Mengel Co.

Container Corp. of America's offer to exchange one share of Container common stock for two shares of Mengel Co. common has been accepted. Previous to its offer, Container Corp. held 436,000 Mengel shares, or approximately 65 per cent. The offer specified that Container Corp. must receive sufficient acceptances to brings its holding to 80 per cent of the Mengel Co. common. Container now has received enough acceptances to give it nearly 90 per cent of Mengel common.

Mengel Co., a prominent furniture manufacturer, is also a large corrugated container maker with plants in Louisville, Ky.; New Brunswick, N.J.; Fulton, N.Y.; Winston-Salem, N.C.; Nashville, Tenn.

### Approve $18,000,000 Loan For Consolidated Expansion

Directors of Consolidate Water Power & Paper Co., Wisconsin Rapids, Wis., have approved a term loan agreement which will provide up to $18 million for expansion. Under the agreement the company has until August 1, 1957 to determine the amount to be borrowed.

# Federal Plans Acquisition of Morris

Federal Paper Board Co., Inc. is planning to acquire the Morris Paper Mills, of Chicago, Ill., by an exchange of shares. The merger plan is subject to a favorable tax ruling and formal approval by directors and stockholders of both companies. A separate meeting of the stockholders of each company will be held in July or August.

Terms of the merger agreement provide that shareholders of Morris Paper Mills will receive four-tenths of a share of Federal common stock and one share of a new Federal 4.6% cumulative ($25. par value) preferred stock for each share of Morris common stock. This exchange will require 114,211 shares of Federal common stock and 285,529 shares of Federal new preferred stock. After the merger, Federal will have outstanding 811,211 common shares and 285,529 shares of 4.6% preferred stock.

As part of the transaction the present outstanding preferred stock of both companies will be redeemed.

Morris Paper Mills, founded more than 40 years ago, has a paperboard mill and a carton plant at Morris, Ill., and another carton plant (Lindley Box & Paper) at Marion, Ind., and will be operated as the Morris Division of Federal. No change in the management or personnel is contemplated. The present officers will continue as officers of the division. Its annual paperboard production is approximately 50,000 tons, of which about 40,000 tons are converted into cartons.

Federal Paper Board produces folding boxboard and converts a substantial part of its production into folding cartons. In 1955 the company's paperboard production exceeded 200,000 tons. Federal has 13 paperboard mills and carton plants along the eastern seaboard.

Federal will have total assets of $37 million and working capital of $13 million, Mr. Kennedy said. Federal's paperboard mills and carton plants are located at Bogota, N. J.; Steubenville, Ohio; White Hall, Md.; Pittsburgh, and Reading, Pa.; Palmer, Mass.; New Haven, Versailles, and Montville, Conn.

# $3,200,000 Ruberoid Mill for Savannah

Stanley Woodward, president, has reported that the Ruberoid Co. will start construction this month of a new $3,200,000 felt mill on a 58,000 sq. ft. site at Savannah, Ga. adjoining the company's present prepared roofing plant.

The mill will manufacture dry felt made from waste paper, wood pulp and rags to be used as a base for the asphalt roofing made by the adjacent Ruberoid plant, which previously got its felt from the company's Gloucester City, N. J. plant. This arrangement, it is expected, will result in substantial savings in freight costs.

## Newfoundland Firm Plans Labrador Pulpwood Cut

Construction men and wood choppers will follow timber cruisers to the woodlands of Labrador this year for the first large scale assault on nearly 50 million cords of stand black spruce.

Resources Minister Fred W. Rowe told the Newfoundland legislature that Consolidated Pulp and Timber Ltd., St. Johns, Nfld., under president S. B. Silver has completed plans for immediate commencement of pulpwood and lumber operations in Labrador.

Charles Cook, a new Brunswick forestry engineer, will be in charge of engineering.

This year's plans are to cut 50,000 cords of pulpwood, which may be increased if summer operations are proved to be feasible making for year-round operations.

## Paper and Board Production

According to the American Paper and Pulp Association, the ratio of the United States production to mill capacity for the week ending April 28, 1956, was 103.0 percent, compared with 103.7 percent, revised, for the preceding week. The ratio was 99.5 percent for the corresponding week a year ago.

The paperboard production ratio for the week ending April 28, 1956, was 99 percent, compared with 99 percent for the preceding week and 96 percent for the corresponding week last year.

(Detailed statistics on page 66).

## Pending Lawsuit Retards Long-Bell Merger With I. P.

According to Ben Schifman, financial editor of the Kansas City, Mo. *Star*, the chairman of the board of Long-Bell Lumber Co. sees the pending law suit filed against Long-Bell by Harbor Plywood Co., as a momentary snag in the merger negotiations between Long-Bell and International Paper Co.

Chairman Jesse Andrews is quoted as telling stockholders of Long-Bell:

"We don't know what was in the minds of those who inspired the lawsuit, but it appears certain to us that it was not with the view of offering relief. It was, in our opinion, filed for the purpose of retarding the pending merger with International Paper and to embarrass those carrying on the negotiations. If a merger is not completed, it will not be because of the lawsuit, which will be vigorosuly resisted. The lawsuit has no merit," he added.

## Continental Diamond Spends $600,000 on Expansion

Continental Diamond Fiber Div. of Budd Co. is planning $600,000 expansion. Included in the project are two new buildings. Completion is expected within four months. The main objective of the expansion is the increase of converted vulcanized fiber products by approximately 30 percent.

## Resume Full Newsprint Production at Ocean Falls

Resumption of full newsprint production at Ocean Falls, B. C., following a winter slowdown caused by an unusual water shortage, was announced today by Crown Zellerbach Corporation.

The rising water level of Link Lake, power supply for the Ocean Falls mill 300 miles north of Vancouver, has made possible the resumption of full-time operation of the Company's two newsprint machines. The lake had dipped to record low levels as a result of a winter "drought" in the Ocean Falls area where precipitation normally is heavy.

## Consolidated Paper Building $250,000 Addition

Work has started on construction of a $250,000 addition to the north side plant of the Consolidated Paper Co., at Monroe, Mich. The addition. It is scheduled for completion in November.

Equipment to be installed will raise the price of the addition to around a million, it was said. The company plans to include in the new machinery multicolor stamping equipment for corrugated boxes.

# Mando Spends Another Million On Newsprint Expansion

Mando's Canadian division, has commenced a million dollar project which will substantially increase newsprint production at the mill at Fort Frances, Ont.

The project involves modification of the mill's No. 7 paper machine resulting in greater operating speeds and improved efficiency and is expected to be completed in three weeks. Fort Frances production will be increased by about 20 per cent.

This marks the second time within a year the company has announced a newsprint production expansion project. Last summer, construction crews at Mando's Kenora mill began a $17 million project which will double that mill's newsprint production. This program is scheduled to be completed and in production by Jan. 1, 1957.

Highlight of the No. 7 Project will be increased speed with a trim of 212 inches. Major improvements will also be made to the wet end of the machine, press section, drive, and winder section.

At the wet end, a new Bird screen will be added, and a new Beloit air padded enclosed headbox and slice will be installed. The number of table rolls will be increased and suction boxes will be replaced. A new forward drive roll will also be added.

The major feature of the rebuilt press section will be the incorporation of a vacuum pickup. The latest innovations in the elimination of suction roll noise will also be incorporated.

A new Bepco motor-generator set of increased power will be installed, and the machine drive enlarged. Some existing motors will be relocated. The new forward drive roll and the couch roll will drive the wire.

Other improvements will include an improved dryer syphon system, and new dryer felt rolls of greater diameter.

The existing Ross Engineering heat recovery system will be expanded to provide hot water for shower purposes.

At the dry end, a new Beloit winder and drive will replace the existing high speed winder.

Auxiliary equipment will include a second fan pump, three new vacuum pumps, Vickery felt conditioner, and an increase in the capacity of the drive cooling equipment.

# Whiting-Plover To Spend $900,000 For Improvements

Whiting-Plover Paper Co. of Stevens Point, Wis., will spend $900,000 on its plant modernization and new building program in 1956-57. The program includes converting the company's power plant to a high pressure steam system, adding 32,000 sq. ft. of floor space for a new finishing department, and purchasing new machinery.

The program was approved at the company's annual meeting on May 1, at which these officers were re-elected: George A. Whiting, chairman of the board; Thomas Leech, president and treasurer; John Hoerres, vice president and secretary; Thomas A. Moore, a Milwaukee banker, assistant secretary and assistant treasurer.

# Price Bros. Sees Growing Newsprint Competition

The point was made at the recent annual meeting of Price Brothers & Co. Ltd., Quebec City, Quebec, that while the immediate outlook for newsprint was good the large expansion program of the industry now under way in Canada and the United States indicates a future condition of keen competition in the newsprint market.

While Price Bros. is behind in its present newsprint deliveries the president stated, plans are being carried out to increase production to take care of this situation.

Referring to the recent increase in dividend rate on common stock, chairman told the meeting that the liquid position of the company and improving earnings justified the increase while permitting the company to retain sufficient funds on hand to provide for a large expansion of manufacturing capacity should circumstances warrant.

## Fibreboard Plans to Spend $50,000,000 in 5 Years

Fibreboard Paper Products Corp., which is the new name Pabco Products Corp. chose to mark its complete acquisition and absorption of Fibreboard Products Inc., has just disclosed its plan for an expanding paperboard capacity through expenditure of about $10 million annually for the next five years.

President W. L. Keady expects the firm will be doing a total business of around $190 million by 1962.

## Mead and Bowaters Sponsor Kentucky Pulpwood Show

Bowaters Southern Paper Co., Calhoun, Tenn., and Mead Corp., Chillicothe, Ohio, recently cooperated with the Kentucky Extension Service in organizing pulpwood harvesting demonstrations in four Kentucky counties.

The demonstrations were presented at specified sites during the first week in May. The four counties: Whitley, McCreary, Laurel, and Rockcastle lie in Cumberland National Forest area of southeastern Kentucky.

Farmers from these and surrounding counties were shown tree harvesting equipment and methods, stocking and measurement of pulp logs, evaluation of stands and cuts, hand-saw operation, and peeling methods.

## Great Lakes Arranges Expansion Financing

A new issue of $10 million of 5 per cent sinking fund debentures of Great Lakes Paper Co., Ltd., Toronto, Ont. dated May, 1956, and maturing May, 1976, is being offered at par by Dominion Securities Corp., McLod, Young Weir & Co., Ltd., Wood, Gundy & Co., Ltd., and H. C. Flood & Co., Ltd. The issue is payable in Canadian dollars only. Proceeds will be used for expansion.

## Clay Company Helps Tell Paper Quality Story

Minerals & Chemicals Corp. of America, miners and producers of Edgar Paper Clays, has included in its 1956 program a series of advertising messages addressed to its customers' customers, the specifiers, buyers, distributors and users of finished papers.

"Our general objective," explained A. G. Blake, executive vice president, "is to help keep paper consumption at all-time highs. Specifically, we tell consumers that paper makers and their chief suppliers are quality-conscious . . . are in close technical cooperation . . . and as a result are supplying a paper-hungry world with the best products ever to come out of the industry."

## Summary of Canada's Wood Pulp Production

Pulp production in Canada in March was 897,393 tons as compared with 866,431 tons in March a year ago. Production for the year to date increased from 2,413,920 tons to 2,577,501 tons this year. Production of all grades of pulp increased during the month. Total chemical pulp production was 410,254 tons as compared with 385,022 tons in March a year ago. Total chemical pulp production for the year to date was 1,169,583 tons as against 1,065,507 tons in 1955.

Owing chiefly to an increase of 7,613 tons in the shipments of dissolving and special alpha pulps, exports of pulp for the month increased from 194,970 tons in March 1955 to 204,952 tons last month. Pulp exports for the year to date were 578,916 tons as compared with 530,611 tons in 1955.

Reflecting the increased production of paper and paperboard, total pulp used in Canada for the year to date was 1,976,374 tons as compared with 1,849,962 tons a year ago. The total pulp used in Canada in March was 686,823 tons as compared with 663,146 tons in March of 1955.

# NEWS OF ASSOCIATIONS

METROPOLITAN TAPPIMEN FETE THE LADIES—This month's meeting of Metropolitan District, Empire State, TAPPI was a May Day celebration to which the ladies were invited. At the head table (above) were (l. to r.) W. A. Beman (district secretary), Lew R. Ayers (district chairman), Mrs. Ayers, Harry W. McHose (guest speaker), Mrs. Kumler, Ralph W. Kumler (program chairman). Mr. McHose spoke entertainingly on his Korean experiences.

## Donates Coater To U. of Maine

The University of Maine has received the gift of a pilot plant machine capable of coating paper by any of the present methods. Dr. Ashley S. Campbell, dean of the College of Technology, announced today. The machine was donated by the Hercules Powder Co., Wilmington, Del., and has a replacement value of approximately $40,000. It will be installed in Aubert Hall where other paper making facilities are located. Acquisition of this coater and auxiliary equipment makes the University of Maine one of the few institutions in the country completely equipped with modern facilities for research on paper coating problems.

A research project, under the sponsorship of TAPPI, has been under way at the university for the past year. The work, under the supervision of Professor Lyle C. Jenness and Robert C. Chase, of the department of chemical engineering, has been primarily concerned with the flow properties of paper coating colors.

## International Sells Pine To Lumber Company

Southern Pine Lumber Co. of Diboll and Pineland, Texas has completed arrangements with International Paper Co. for the purchase of 100 million feet of pine timber.

## Lake States Timber Resources to Keynote Supts. Meeting

The Northwestern Division of the American Pulp and Paper Mill Superintendents Assn. will hold a Regional Meeting on May 17 in Rhinelander, Wis. There will be a visit to the Rhinelander Paper Co.'s mill; and a dinner meeting at Hotel Fenlon. The mill visit is scheduled to start at 3:30 P.M.

The program of the dinner meeting will feature a panel discussion on "Timber Resources Review" as it applies to Lake States area.

## Salwen Heads Paper Assn.

Sidney Salwen, president of Joe Salwen Paper Products Corp., 245 West 67th St., New York City, and vice president of Crown Paper Board Co., Inc., Philadelphia, Pa. was elected President of the Paper Assn. of New York City at the annual meeting on May 2nd.

**The 80th Annual Convention of the American Paper and Pulp Assn. is scheduled for February 17-22, 1957. The Annual Dinner will be on Thursday, February 21, in the Grand Ball Room of the Waldorf-Astoria Hotel, New York City.**

## First Annual Recognition Night

First Annual Recognition Night of the Michigan Division of the American Pulp and Paper Mill Superintendents' Assn., in conjunction with the Kalamazoo Valley Section of TAPPI will be held May 17, 6:30 P.M., at the Hotel Harris, Kalamazoo, Mich. This is the meeting you cannot afford to miss.

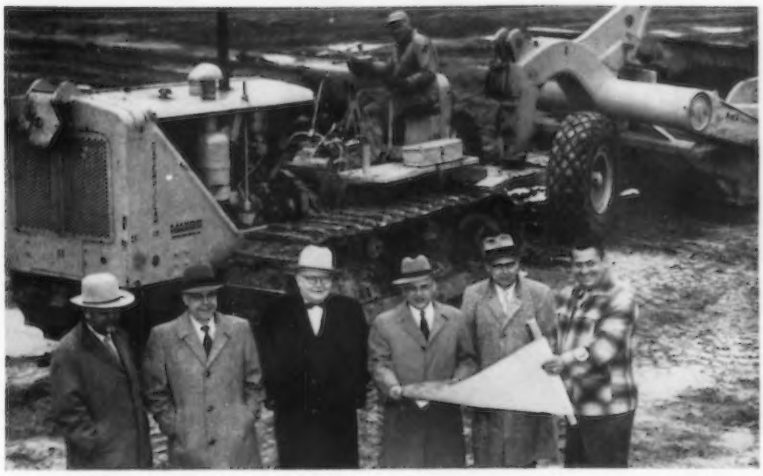
On the agenda are: Election of officers for both groups; Honoring of all past chairmen of both TAPPI and Superintendents; Recognition for Western Michigan College Seniors.

Each senior at Western Michigan College will present a brief synopsis of a research project completed during his senior year. Each senior will also receive a commemmorative scroll as a souvenir of the occasion.

## New Secretary for Waterproof Assn.

The Waterproof Paper Manufacturers Assn. has appointed Dernell Every as its secretary-treasurer to take the place of Philip O. Deitsch, resigned. T. K. Heston will be assistant secretary-treasurer and the firm of Sawyer & Marion will act as counsel. The new offices of the Association will be in Room 3000 of the Chanin Building, 122 East 42nd Street, New York 17.

# NEWS OF CONVERTERS OF PAPER AND PAPERBOARD



**OFFICIALS ON HAND AS GROUND IS BROKEN FOR THE NEW HINDE & DAUCH PAPER CO.**—Corrugated container plant in Eaton, Ohio. The $2 million addition to this West Virginia Pulp & Paper Co. subsidiary is expected to be making boxes by December 1956. Officials (L. to R.) are: Willard Miltonberger, mayor of Eaton; Edward Steffen, president, Eaton Chamber of Commerce; Carl Frohman, Dayton Power & Light Co. area supervisor; Charles E. Frohman, president of Hinde and Dauch; George M. Muellhauser, treasurer of Hinde and Dauch; John Goroshko, engineer in charge of construction.

## Aircraft Corp. Bids For Fulton Bag Firm

A second offer of $11,200,000 for the outstanding common stock of Fulton Bag & Cotton Mills, Atlanta, Ga., has been made by Bellanca Aircraft Corp. of Akron, Ohio., according to the *Akron Beacon Journal*.

Bellanca has offered $21.25 a share for all outstanding 480,000 Fulton Bag shares. It is believed the offer calls for a stock exchange, trading Bellanca shares for Fulton, rather than a straight cash deal.

Negotiations on Bellanca's initial offer were broken off early in April and in the meantime a group of North Carolina textile men are reported to have offered $20 a share for Fulton stock.

Fulton manufactures a wide line, including paper lined waterproof textile bags and multiwall paper bags.

### Expands Lodi Plant

General Mills, Inc. plans to construct an addition to its cereal and cake-mix packaging plant at Lodi, Calif.

The new project will add 76,130 sq. ft. of manufacturing area. This expansion will enable General Mills to package its entire line of cake-mix and cereals at Lodi, Calif.

### New Converter for Bogalusa

Textile Paper Products, with plants in Crossett, Ark., and Cedartown, Ga., will open a new factory at Bogalusa, La. in the near future.

Installation of machinery has begun in the old GM&O railroad shop building under supervision of Rober Smith, who will manage operations.

### Bankers Box Builds

Bankers Box Co., Inc., 720 S. Dearborn St., Chicago, Ill. markers of storage boxes for permanent records, is erecting a new plant on 25th avenue in Franklin Park in Clearing Industrial District. The new plant will contain 39,000 sq. ft. floor area and will house the entire operations of this 38-year-old firm.

### Tee-Pak Plans Another Plant

Tee-Pak, Chicago, Ill., a producer of food packaging products agreed to the sale this year of a $2.5 million note, due September 1, 1972 to Prudential Insurance Co. of America. The proceeds will be used to build a branch plant in Danville, Ill.

### Will Stress Packaging At Clinic

The merchandising role of packaging will be spotlighted at the first Packaging Clinic of the National Retail Dry Goods Assn. planned for June 25-27 at New York's Hotel Statler.

Top executives in manufacturing, retailing and packaging industries will participate in the three-day seminar, which will expand the theme "How More and Better Coordinated Packaging Can Sell More Merchandise."

Edward F. Engle, manager of NRDGA's sales promotion division and supervisor of the packaging show, said:

"The goal of the packaging clinic will be to examine how the best aspects of the marketing revolution of the last ten years can be adapted to the department store field. We will seek to show how the packaging era and the evolution of self-service have had an impact on all types of goods sold through department stores."

### Carpenter Acquires Northwest Envelope

Northwest Envelope Manufacturing Co. of Seattle, Wash. was acquired by Carpenter Paper Co. of Omaha, Nebr., in a stock exchange transaction negotiated by Pacific Northwest Co. The Seattle concern, which has sales offices in Spokane and Portland, Ore., will retain its corporate identity, according to Kenneth C. Holland, president of Carpenter. George W. Milne, Northwest Envelope manager, will continue in that position.

### Roseville Converter Expands

To handle its increasing business volume, the Gebhard Paper Co., Inc., Roseville, Ohio, has moved to larger quarters at 500 Carlton St. from 150 Ellicott St. President Donald K. Welch said the company has leased 9100 sq. ft. of the Carlton St. building, or 2½ times the space the company occupied in the Ellicott St. quarters. Some new equipment is being installed.

### Palm Container Starts New Corrugator in Miami

Installation of what is said to be South Florida's first corrugating machine to production of corrugated containers was completely recently in the Palm Container Corp. plant in Miami.

The 62-foot machine, installed as part of an expansion program, is capable of processing 300 feet of board per minute. With increased production, the company anticipates sales of a million dollars in 1956.

Palm Container Corp. is affiliated with the Atlanta Paper Co., Atlanta, Ga.

# PRICES OF FIBERS

## MARKET WOOD PULP

### SECOND QUARTER CONTRACT PRICES PER SHORT AIR-DRY TON

| | Delivered Basis | | Varying Freight Allowances† | | |
|---|---|---|---|---|---|
| | U.S. | Canadian | Swedish | Finnish | Norwegian |
| Groundwood | $82.50/ 90.00 | $82.50/ 90.00 | $$83.00/ 86.00§ | $90.00/ — | $$77.50/ 90.00 |
| Kraft, Blchd. | 152.00/155.00 | 155.00/ — | $155.00/ — | | $155.00/ — |
| Kraft, Blchd. Hdwd. | 150.00/ — | | $137.50/ — | | |
| Kraft, Semi-bleached | 140.00/145.00 | 135.00/140.00 | $137.50/140.00§ | *140.00/ — | |
| Kraft, Unbl. | 117.50/125.00 | 120.00/130.00 | †125.00/130.00 | 125.00/145.00 | |
| Sulphite, Blchd. | 150.00/ — | 150.00/ — | *150.00/ — | *150.00/ — | 145.00/147.50† |
| Sulphite, Unblchd. | 130.00/ — | 130.00/ — | †130.50/ — | *130.00/ — | |
| Sulphite, Unb'l. Gl'sn | | 129.00/ — | †129.00/ — | | |
| Soda, Blchd. | 142.50/145.00 | 145.00/ — | | | |

‡ F.o.b Shipping Point. § On Dock Atlantic Ports. * Freight allowed.

## NEW YORK RAG MARKET

### New Domestic Cotton Cuttings

Delivered Mill Basis
PRICES NOMINAL

| | Per 100 lbs. |
|---|---|
| No. 1 White Shirts | $15.25/$15.50 |
| No. 1 Unblchd. Muslins | 17.00/ 17.75 |
| Blchd. & Unblchd. Underwears | 17.00/ 18.00 |
| No. 1 Light Silesias | 7.25/ 7.75 |
| No. 1 Light Blue Overalls | 9.00/ 9.50 |
| Percales | 7.00/ 7.50 |
| No. 1 Light Prints | 5.50/ 6.00 |
| Suntan Khakis | 6.00/ 6.50 |
| Cottonades | 3.50/ 4.00 |
| No. 1 Washables | 3.00/ 3.50 |

### Old Domestic Cotton Rags

(Prices to Dealers, F.o.b. Ship. Pt.)

| | Per 100 lbs. |
|---|---|
| Mixed White | $3.00/$3.50 |
| Cotton Pants & Overalls | 2.25/ 2.50 |
| Thirds and Blues, Repacked | 1.75/ 2.00 |
| No. 2 Roofing | 25.00/ — |

## COTTON LINTERS

### Memphis Market

F.o.b. Oilmills

| | May 1 Per 100 lbs. |
|---|---|
| Grade 1 n.a. | |
| 2 | $9.10/ $7.70 |
| 3 1st cut—felting | 7.00/ 5.80 |
| 4 | 5.25/ 4.20 |
| 5 | 3.75/ 3.05 |
| 6 | 3.00/ 2.75 |
| 7 | 2.75/ — |

*Based on 73% cellulose.

### Bagging

(Prices to Dealers, F.o.b. N. Y.)

| | Per 100 lbs. |
|---|---|
| Foreign Gunny | $5.50/$6.00 |
| Foreign Scrap Burlap | 5.50/ 6.00 |
| Heavy Wool Tares | 6.50/ — |
| Foreign Manila Rope | 6.50/ 7.00 |
| Domestic Manila Rope | 7.75/ 8.25 |
| Domestic No. 1 Sisal Strings | 5.25/ 5.75 |

## WASTE PAPER MARKET

### Mill Prices, f.o.b. Trucks Shipping Point - Includes Brokerage

**These quotations are a partial indication of the price range on volume tonnage in each market on the date specified, as gathered from major dealers. SPECIAL PACKINGS AND SPOT TONNAGE NOT INCLUDED. Prices nominal.**

| | New York May 7 | Boston May 7 | Chicago May 7 | Los Angeles May 7 |
|---|---|---|---|---|
| No. 1 Mixed Paper | 12.00/ 14.00 | — / 16.00 | 15.00/ — | 14.00/ — |
| No. 1 News | 17.00/ 18.00 | 21.00/ — | 16.00/ — | 14.00/ — |
| Overissue News (Lg. size) | 22.00/ 24.00 | 19.00/ 21.00 | 21.00/ — | 14.00/ — |
| Mill Wrappers | 20.00/ — | 19.00/ — | 18.00/ — | 14.00/ — |
| Old Corrugated Containers | 27.00/ — | 26.00/ 27.00 | 27.00/ — | 19.00/ — |
| Super Resorted Kraft Paper | 46.00/ 48.00 | 45.00/ 50.00 | 45.00/ — | 45.00/ — |
| New Double Kr. Ld. Corr. Cuts | 40.00/ 42.00 | 45.00/ 47.00 | 45.00/ — | 35.00/ 40.00 |
| (Semi-chem. medium) | 45.00/ 55.00 | 47.50/ 55.00 | 47.50/ 50.00 | — / — |
| New 100% Kraft Corr. Cuts | 55.00/ 65.00 | 55.00/ 65.00 | 70.00/ — | 45.00/ — |
| New Br. Kraft. Env. Cuts | 90.00/105.00 | 85.00/ 95.00 | 75.00/ — | 60.00/ — |
| New Br. Kr. Bag Waste Prntd. | 65.00/ 75.00 | 65.00/ 75.00 | 65.00/ — | 65.00/ — |
| New Br. Kr. Bag Waste Unprntd | 75.00/ 80.00 | 80.00/ 90.00 | 80.00/ — | 65.00/ — |
| No. 1 Groundwood Shvs. | 45.00/ — | 35.00/ 45.00 | 35.00/ — | 27.00/ 30.00 |
| White Newsblanks | 80.00/ 82.50 | 70.00/ 80.00 | 55.00/ — | 60.00/ — |
| No. 1 Soft White Shvs. | 75.00/ 80.00 | 75.00/ 80.00 | 75.00/ — | — / — |
| Super Soft Wh. Shvs. | 85.00/ 95.00 | 85.00/ 90.00 | 85.00/ — | — / — |
| Hd. Whit. Shvs. | 110.00/115.50 | 110.00/115.00 | 115.00/ — | 105.00/ — |
| Hd. Wht. Env. Cuts | 130.00/ — | 125.00/135.00 | 115.00/ — | 120.00/ — |
| Col. Tab. Cards | 70.00/ 75.00 | 70.00/ 72.00 | 65.00/ — | 42.50/ — |
| Manila Tab. Cards, bales | 90.00/ 95.00 | 90.00/ 95.00 | 90.00/ — | 69.00/ — |
| No. 1 Col. Ledger | 35.00/ 40.00 | 40.00/ 42.50 | 50.00/ — | 35.00/ — |
| White Ledger | 70.00/ — | 70.00/ 75.00 | 65.00/ — | 45.00/ — |
| Mixed Book & Mag.† | 26.00/ 27.00 | 30.00/ 32.00 | 23.00/ — | — / — |
| No. 1 Rep'd. Hvy. Books‡ | 29.00/ 30.00 | 31.00/ 33.00 | 35.00/ — | — / — |

† Includes Time & Life; no coarse groundwood. ‡ Not to exceed 10% of groundwood. § Deld.

# PRICES OF MATERIALS

| | | |
|---|---|---|
| **Aluminum sulphate:** | | |
| cml bags, c.l. wks. | cwt. | $1.85 / — |
| iron-free, c.l. wks. | cwt. | 3.55 / — |
| **Casein, acid prec.:** | | |
| dom. sh. pt. c.l. (30 mesh) | | 32.00 / — |
| Arg. ex. dock, duty paid | | 21.50 /22.00 |
| New Zeal., do. | | 26.00 /27.00 |
| **Caustic soda:** | | |
| c.l. wks. solid, 76% | cwt. | 4.10 / — |
| flak. & grd. 400-lb. drums, c.l. | | 4.50 / — |
| liquid 50% tanks | | 2.80 / — |
| liquid 70% tanks | | 2.90 / — |
| **China clay:** | | |
| dom. air-float, c.l. (Geo. Wks.) | ton | 10.00 |
| water-washed, lump, filler, | ton | 11.00 |
| coating | ton | 17.60 /40.00 |
| Imported, ex. ship. | short tons | 20.00 /35.00 |
| **Chlorine:** | | |
| single-unit tanks, works. | cwt. | 3.05 / — |
| multiple unit, 2-5 cars per yr. | | 3.92 / 5.12 |
| **Formaldehyde:** | | |
| USP, inh. dms. c.l. wks. | lbs. | .0675/ — |
| lcl., E. wks. | lb. | .072 /.0725 |
| **Lime:** | | |
| hydrated (bulk, c.l.) | tons | 20.21 / — |
| **Gum rosin:** | | |
| K, M, N, drums, c.l. Savan, | cwt. | 8.16 / 8.32 |
| **Rosin size:** | | |
| 70%, gum & pale grds., tank cars, south, sh. pt. | cwt. | 7.24 / 7.28 |
| **Salt cake:** | | |
| dom. bulk, 100% anh. wks. | ton | 28.00 / — |
| imp. f.o.b. Saskatchewan | | 18.00 / Cana. funds |
| **Soda ash:** | | |
| light, 58%, bags, wks. | cwt. | 1.75 / — |
| bulk | cwt. | 1.45 / — |
| **Sodium silicate, 40° Be.:** | | |
| tank-cars, wks. | cwt. | 1.10 / — |
| drums, c.l. wks. | cwt. | 1.45 / — |
| (47°) Be. WW. | | |
| tank-cars, wks. | cwt. | 1.75 / — |
| drums, c.l. wks. | cwt. | 2.10 / — |
| **Sodium peroxide:** | | |
| dms. c.l. E. of Miss. | lb. | .186 |
| l.c.l. (same basis) | lb. | .191 / .196 |
| **Soybean, protein:** | | |
| chem. isol., wks. c.l. bags | lb. | .23 / — |
| **Sulphuric acid:** | | |
| 60° Be. cbys. c.l. wks. | cwt. | 2.00 / — |
| l.c.l. wks. | cwt. | 2.45 / — |
| tank-cars, wks. | ton | 18.60 / — |
| **Sulphur:** | | |
| crude, c.l. mines, contract, | long ton | 26.50 / — |
| f.o.b. vessels Gulf | do. | 28.00 /31.00 |
| **Sulphur dioxide:** | | |
| liquid, coml. cyl., wks. | lb. | .10 / .12 |
| multi-unit cars, wks. | lb. | .0535/ |
| **Starches:** | | |
| corn, multiwalls, c.l. prod. plant: | | |
| pearl | cwt. | 6.39 / — |
| white, dextrins | cwt. | 7.55 / 7.80 |
| chlorinated | cwt. | 8.15 / — |
| potato, Idaho, c.l. wks. | cwt. | 6.60 / — |
| East, fr. all. 50 cents cwt. | | |
| potato, Maine, f.o.b. wks. | cwt. | 6.50 / 6.75 |
| **Talc:** | | |
| c.l. wks., N.Y. | ton | 28.00 / — |
| c.l. wks., N.Y. | ton | 27.00 /37.00 |
| **Titanium dioxide:** | | |
| anstase, c.l. deld. E. bags | Nlb. | .24½/ — |
| l.c.l. deld. | lb. | .24½/ — |
| rutile, c.l. deld. | lb. | .26½/ — |
| l.c.l. deld. | lb. | .27½/ — |

# For Asbestos Cement Manufacturers

*New*

# HUYCK NEEDLED FELTS

## Not An Experiment — But Proved in Plant Use Over the Past 1 ½ Years

Huyck now offers felts specifically engineered for the asbestos cement industry.

The manufacturing process — incorporating techniques and equipment independently developed by Huyck's engineering staff — consists of needling a fiber bat into a loosely woven base fabric.

A wide range of constructions, including various fiber blends, nylon, cotton and wool is available.

Huyck's well-informed Sales Engineers and Field Service Engineers will be glad to discuss your specific requirements with you. Your inquiry will receive prompt attention.

NEW! HUYCK FELTS

FIRST IN QUALITY... FIRST IN SERVICE

F. C. HUYCK & SONS • Rensselaer, New York
Established 1870

KRYWOOD TEXTILE PRODUCTS

# A Fresh Approach To Fourdrinier Machine Maintenance Procedure

**M. L. Boinest, Jr.,** and **C. L. Wills,**
Paper Mill Superintendent — Plant Engineer
Halifax Paper Co.

For several years, most of which have been marked by rapid expansion of plant facilities, adequate preventive and corrective maintenance planning has been one of our most pressing problems. As a result of some study and much trial-and-error experience, we are now in the process of developing our maintenance procedures and personnel along the lines outlined below which we believe hold great promise.

As in all such situations, the success of our maintenance plans and procedures will depend heavily on close cooperation and communication between the maintenance department, the engineering Department (under which the maintenance is placed for organizational purposes), the productions departments, and the various staff functions of the plant operation such as purchasing, accounting, etc.

## The Organization

In our plant, the maintenance function is placed under the plant engineer, who in return reports to the general superintendent. The plant engineer has under him a design engineer with a staff of design engineers and draftsmen, and reports to the plant manager on matters of general plant engineering, new construction, and special studies as requested. The design engineering group is assigned to work on studies, plant additions, and maintenance problems as needed.

Under the plant engineer, all maintenance is headed up by the maintenance superintendent who has under him three groups: mechanical, electrical, and instrument—each headed by a supervisor. The mechanical and electrical groups are further divided into working units under leadmen.

The mechanical group is divided into a fairly large general gang, a construction gang, and three smaller area gangs in respectively the pulp mill, the older paper mill, and the new paper mill. There are two shift millwrights on each shift. Also, under the mechanical supervisor come the machinists group and the oilers. The oilers are composed of a lead oiler, shift oilers for the older paper mill (because of the nature of some of the equipment), and day oilers in the pulp mill and new paper mill.

The electricians are composed of one shift man for each shift under a leadman working days, who is also responsible for all paper mill maintenance, and a general group under a leadman, who is also responsible for all pulp mill maintenance.

The instrument crew is a small group under centralized control.

Previous to 1953, the plant was composed of a pulp mill and two small paper machines, one trimming 90″ and running up to 600 f.p.m., and the other trimming 82″ and running up to 400 f.p.m. In early 1953, a large Beloit paper machine was installed in a separate new building with completely separate stock handling, finishing and shipping facilities, so that its operation was entirely independent of the older paper mill. The new machine is modern in every respect, trimming 226″ and running up to 2000 f.p.m. It is equipped with a turbine driven differential mechanical drive and A.C. electric helper motors.

At the time of the start-up of the new machine, the maintenance organization was set up basically as outlined above. Since then, there have been changes in and additions to records keeping and controls, all in the direction of improving the organization, with the ultimate goal of ideal maintenance control still in front of us. Generally, our conception of this ultimate goal as it applies to the fourdrinier machines is as follows.

## Maintenance Plan

In planning our paper machine maintenance program, we realized at an early stage that if maximum machine availability was to be realized, it would be necessary to closely correlate the activities of both maintenance and operating personnel. This system of correlation has been evolved over a period of several years and is constantly being subjected to re-evaluation, review, and correction. If the program is to be effec-

**Superintendent Boinest**

**Engineer Wills**

tive, this correlation must be evident in all of the facets of the maintenance function.

It is the intent of this portion of the discussion to show how operating personnel at various organizational levels fit into the program and through their activities provide valuable assistance in the performance of the maintenance function. It should be stated here that the responsibility for the overall performance of the maintenance program rests with the general superintendent; and that, while he may delegate a portion of his responsibility and corresponding authority, he may not relieve himself of the overall responsibility or of his accountability for the performance of the maintenance function.

## Two-Fold Concept

In this two-fold concept of paper machine maintenance, the operating personnel and the maintenance personnel have an apportunity to mutually consult and agree on all of the factors which contribute to sound maintenance practice. Operating personnel at the supervisory level are consulted on the organization of maintenance forces and have an opportunity to criticize objectively this organization as it affects their operation. Further, and more important, they have the opportunity to consult and agree with maintenance and engineering on the organization of work forces to undertake routine maintenance, major repairs, preventive maintenance, inspection, etc.

In the areas of inspection and preventive maintenance, for example, operating personnel with proper training can in the course of their normal operating duties make routine inspections and minor adjustments to parts of the machine and its auxiliaries, which in some cases reduces the amount of maintenance personnel normally required for this purpose and increases machine availability. In these areas, a factual reporting system and a clear understanding of what is taking place is a must. Information supplied by operating personnel is processed by competent maintenance engineering and corrective action, if indicated, is immediately initiated. We do not by the above intend to indicate that all inspection or preventive maintenance can be achieved in this manner because of the obvious limitations imposed by the lack of mechanical skills of operating personnel. We believe, however, that operating people at all levels can be effective in improving availability of machines and auxiliaries by careful attention to warning signs and by promptly reporting deficiencies in operations to qualified maintenance personnel.

**How a small older mill, which went through rapid expansion, developed its maintenance program.**

## Records are Essential

In any good maintenance program, complete, accurate, and current records are essential. One set of records which we have found to be of extreme value is the "Maintenance History". In the establishment of an accurate and complete history of a given piece of equipment or portion of a machine, operating personnel can provide valuable assistance to maintenance by reporting in writing unusual operating experience, adjustments made, minor maintenance required, etc., and by having the operator's report incorporated in the "Maintenance History", the maintenance superintendent has a clearer grasp of how a particular piece of equipment is actually performing and potential trouble with resultant loss of availability is often pointed up well in advance. Operating personnel can often recommend changes in methods and practices which result in better operating experience. It is our opinion that correlation between operating and maintenance personnel in this particular phase is invaluable.

Through the use of "Maintenance Cost Reports" and "Equipment Operations Expectancy Reports", operating supervisors can keep aware of equipment conditions and are, therefore, better able to prepare production schedules which will result in a minimum of shutdown time and of equal importance that the down-time will occur when maximum effort may be realized on the part of both operators and maintenance personnel. We have found, for example, that by scheduling major clothing changes on the paper machine, that the productivity of both operators and maintenance people is considerably increased; and, further, that the total time lost as a result of mechanical failures of equipment is reduced tremendously.

## Importance of Operating Supervisor

In the field of training and replacement of maintenance personnel, operating supervisors can again perform a valuable function. It is the responsibility of operating supervisors to at all times be aware of the training level of all maintenance personnel with whom they are directly concerned and to mutually agree with maintenance supervision on the types and degrees of training which are necessary to improve the overall operation of maintenance function. Operating supervisors can at times act as instructors in training of maintenance personnel in various phases, and it is our opinion that it is important that maintenance personnel be given some formal training so that they might better understand the operations and their place in the total effort. Operating supervisors through observation, inspection, and evaluation of specific maintenance performance can often times recommend improvements and the necessity for training which maintenance supervision may evaluate and put into effect.

In the field of maintenance procurement, operating supervisors have an opportunity to review with maintenance personnel various items to be stocked so that inventories may be kept at realistic levels and costs thereby reduced. In the field of production scheduling, operations personnel at the supervisory level, through liaison with maintenance supervision, can often effect changes in production schedules which will materially improve machine availability. The end result of this type of correlation provides maintenance supervision with the opportunity to concentrate maintenance efforts in the most efficient manner and again materially improve availability of equipment.

It is our opinion that the two-fold concept of maintenance-operating correlation is a thoroughly practical one for a mill of any size, but one which is particularly applicable to the small or medium sized operations. We recognize that our system leaves much to be desired, but we believe that it is established on a sound basis and that by constant review and correction, it can be a valuable tool in the efficient operation of paper machines and that the product of such a system will be decreased maintenance costs and materially increased machine availability.

## Execution of the Plan

Maintenance of a paper machine is composed of a large number of smaller jobs, many of which can be done without stopping the machine, and a lesser number of larger jobs. The machines must be shut down for changes of wires and felts, and there is a one-week plant shutdown at July 4 and a shorter shutdown at Christmas. The ideal goal is to do all repair work during these times, with no lost time in between because of mechanical failures. This goal can never be completely attained, because there are occasional larger jobs that must be done between mill shutdowns that take several hours more than a wire or felt change, such as pulling a box from a suction roll, or changing calender rolls, or changing a major machine roll.

For the two major yearly shutdowns, plans are made weeks or months in ad-

vance with the Maintenance Superintendent heading up his planning by making lists of the major jobs and by assembling materials well in advance. Operating people are consulted from the beginning to the last day beforehand, and the planning culminates in final preparation of detailed work lists, scheduling of work, assignments of job and meetings at all levels of maintenance personnel, doing preparatory work, checking on equipment and materials, arranging for work by outsiders, etc. In doing this planning, provision must be allowed for doing work that was not expected but that is found to be necessary when equipment is examined in detail.

## Clothing Changes

Wire changes are usually foreseen and scheduled one day ahead. For the No. 3 machine, a list of work to be done is made up by the area leadman in conjunction with the paper mill superintendent and then gone over with the mechanical supervisor and maintenance superintendent. Electrical and instrument items are added by electrical and instrument supervisors. The list is typed and put in the hands of the paper mill superintendent and appropriate maintenance supervisors and leadmen who make ready their part of the job.

Felt changes between wire changes, if occurring during the day, are used by the area leadman with his crew to do smaller jobs. Normally, a felt change during the night is not made the occasion for maintenance work because of the delay in bringing men in and the premium labor cost involved.

The area leadman also has before him a list of jobs to do while the paper machine is running, and he works on these during his normal working hours.

On all planned shutdowns, men are brought in from the entire mill crew, as many as are needed or can be used, in order to get the planned work completed during the time available. If the shutdown is a long one, we try to do as many other jobs as possible during the shutdown by assigning sufficient men to the job.

Orders for doing corrective maintenance—that is, repairing something known to be needing repair—may originate either with the operating superintendent or maintenance personnel. They are usually routed through the area millwright leadman, the paper mill electric leadman, or the instrument supervisor. It is their responsibility to see that suitable arrangements are made to get the required men and materials and equipment on the job ahead of shutdown.

## Emergency Repairs

Emergency repairs are handled as the occasion justifies. If possible, they are handled by the shift mechanics and electricians. If the job is too big for the shift men, they may call in the leadman who, on coming in, will bring with him whatever other personnel he thinks needed. If the trouble is major, either the operating or maintenance people on the spot notify higher supervisory personnel as they think necessary. At night and on week ends the shift men take care of troubles as far as possible. Also, there is a schedule set up for week ends so that one of the following men will always be "on tap": plant engineer, maintenance superintendent, mechanical supervisor, or electrical supervisor. Needless to say, the better the program of planned and preventive maintenance, the less will be the unscheduled breakdowns.

## Preventive Maintenance

Orders for preventive maintenance usually originate with leadmen or in the maintenance office. Those of a minor nature are sent out to the leadmen in the form of tickler cards. These tickler cards are made out for a year in advance and are put in dated folders and pulled out when the date arrives. They cover items such as opening and inspecting couplings, opening up pumps, inspecting crane cables, and special things to look for in various machinery. They may have a frequency of a week, month, six months, or any desired period depending on previous corrective or preventive history. When the job is done, the addressee of the tickler card initials it and fills in whatever remarks are appropriate and routes it back to the maintenance office. It is usually routed through operating personnel for their information. Ticklers are also used for various reminders, such as to remind the clerk a certain report is due, to remind an operating superintendent to call a fire drill, etc. As experience dictates, the number of preventive maintenance items is continually being added to, and the tickler file is growing.

Larger preventive maintenance items are usually ordered by the maintenance superintendent or one of the operating superintendents and are incorporated in the work list for a planned shutdown.

## Maintenance History Records

One of the important elements of maintenance control was considered to be maintenance history records. The first step in setting these up was to assign an equipment number to each item of equipment. This coincided with a program of the accounting department to set up a new code of cost accounting numbers for the entire company to suit an IBM accounting system. Thus, each piece of equipment was given a four digit number—the first two digits for the department and the last two for the piece of equipment. Thus, number 3942 is No. 3 machine fan pump; number 39, for No. 3 machine; and number 42, for the particular item which was the fan pump. Ahead of these digits is a digit indicating whether repair labor or repair materials and other digits in this position and ahead of this serve other accounting purposes. This makes it possible for IBM accounting to turn out a report showing maintenance materials and labor charged to each item of equipment. As yet, this system is not in full operation; but, when it is, a report for every four-week period will be sent to the maintenance office. This information will be entered on a card file for each item of equipment.

Also, there will be entered in the equipment folder a slip each time an important repair is made to this piece of equipment. The slip will be filled out by the leadman on the job and turned in to the maintenance office.

The above information on cost and work done will give the maintenance superintendent ready information by which he can look for trouble spots and take action to correct them.

To facilitate maintenance work, there is kept in the maintenance office an equipment file in which blueprints, instructions, parts lists, special information on settings and adjustments, etc., are kept in folders filed by equipment number.

## Spare Parts and Supplies

Basically, all supplies and spare parts are procured and stored by the purchasing department and issued to maintenance personnel as needed and charged against the equipment when issued. It is the responsibility of the purchasing department to keep on hand supplies and spare parts within the limits of the set stock level. Additions to the stock level are originated by the maintenance superintendent after consulting with operating superintendents, other supervisors, and leadmen and must be approved by the general superintendent and/or resident manager.

For some items such as larger bearings, parts common to our paper machine and machines of other companies, etc., arrangements can be made for these to be held in stock by manufacturers or dealers and delivered to the mill quickly when needed. Arrangements of this kind are usually originated by maintenance and put into effect by purchasing. Here is where cooperation between the two functions is necessary because maintenance usually has the special knowledge of the particular situation and purchasing has the responsibility of carrying

it out along with their job of making all purchases for the mill. A similar situation sometimes arises in emergency procurement of some badly needed item in which cooperation and forbearance on the part of both parties is necessary.

### Results

Actual performance results of the maintenance system have been encouraging, but there is still a large area for improvement. One of the weaknesses of the system as now set up is the excessive load on the area leadman in doing planning as well as supervising work. Study is now being made on methods to correct this.

There have been both bright and dark spots in the picture. For example, one case of appreciable trouble was experienced with the draw control of the differential drive to the paper machine reel. Several repair jobs were done, all failing to correct the trouble. Finally, it was discovered that improper emergency repairs had been made to tubing to the clutch, which permitted enough leakage to cause occasional slipping of the clutch. This stop-gap repair was not reported to the proper parties. Had it been known, it could have been corrected at the first shutdown of the machine and much resulting trouble saved.

There have been repair shutdowns that did not go on schedule and where men, tools, and equipment were not at the right place at the right time. There have been cases where men on a repair job did not know the proper procedure for taking down and reassembling certain machinery. To correct this, a practice has been started to get the key men involved together beforehand, with the proper supervisor, and go over procedure using blueprints and manufacturers' instructions. In a recent change of several dryer bearings, this practice paid off in that a large amount of work was done by a reasonably sized force of men in a relatively short time.

The design engineering section has been used effectively in maintenance problems as well as changes and additions. Working with maintenance personnel, they have made drawings for design changes to machines. They have also made drawings for use in keeping certain maintenance records, such as steam joint replacements, dryer bearing changes, etc. They have also done the design work for medium size additions, such as additions of jordans, a soundproof room for jordans, additional felt dryers, and a safety gate for the machine winder developed here by mill personnel. On all such jobs, they work closely with operating and maintenance personnel so that the final design and the reasons for it are understood and agreed on by all parties concerned.

# Follow These 20 Tips For Longer Belt Life

**Newell Perry**
Belting Engineer, Thermoid Co., Trenton, N. J.

Belt users will wish to check present practice against these suggestions which are enclosed with every Thermoid belt shipped.

**1—Select Proper Belt**—choose a belt that is designed for the materials to be carried, temperatures encountered, and tension required.

**2—Design Supporting Structure Carefully**—check diameter of pulleys, spacing of idlers, take-up mechanism, load-point.

**3—Correct Storage**—if belt is not installed at once, store out of sunlight, away from hot pipes, stoves, radiators.

**4—Avoid Handling Damage**—when received from manufacturer, don't drop a heavy roll of belt off truck or railroad car—skid, roll or lift it.

**5—Plan Installation**—threading of belt over idlers and pulleys is critical. Avoid bending belt sharply. Take care not to drag over sharp, rough surfaces. Before belt is run, check for tools left accidentally on return side.

**6—Check Belt Alignment**—supporting structure should be aligned with a transit. Misalignment causes crooked running and edge wear.

**7—Strive For Ideal Loading**—material should be loaded on belt in the same direction and at same speed, as belt travel. Load middle of belt, not sides.

**8—Avoid Impacts From Lumps**—load hard lumpy material on top of fines, wherever possible. Use finger bars or chain baffles to reduce velocity of lumps at loading point. Direct load to strike belt between idlers, if possible. Keep distance from chute to belt at a minimum.

**9—Use Impact Idlers**—in extreme cases such as larger rock lumps, load over rubber-covered or pneumatic idlers to reduce hammer-anvil effect on belt, which causes ruptures.

**10—Design Rugged Loading Chute**—loading chute should be permanent, strong, securely fastened device. Avoid jerry-built, "baling-wire" contrivance which may loosen and drag on belt.

**11—Guide Material With Skirt Boards**—skirt boards should not touch belt. Distance between belt and board should increase in direction of travel so wedged-in lumps will free themselves.

**12—Fix Responsibility for Belt Maintenance**—assign a "belt-boss" to check belt, make repairs and adjustments.

**13—Inspect Belt On Schedule**—"belt boss" discovers small rips, tears, worn spots before real damage can be done and pays particular attention to splices.

**14—Maintain Belt Repair Kit**—tools, splicing fasteners, rubber cement, patching rubber, rip plates should be ready at all times for making belt repairs, at once, as soon as discovered.

**15—Cover Return Side With Deck**—keep spilled material off return side, with metal or wooden decking to prevent lumps from running between belt and terminal pulley. Brushes or scrapers are beneficial.

**16—Cover Belts**—a metal or wooden cover will protect belts installed outdoors against sun and against weather.

**17—Keep Cost Records**—continuous records or maintenance and repair costs against tonnage carried will indicate service quality.

**18—Lubricate Wisely**—check idlers regularly for adequate grease but avoid excess grease which will smear belt and shorten life.

**19—Interconnect Conveyors**—provides means of automatically shutting off preceding belts in a series to prevent pile-ups of material if a following conveyor stops.

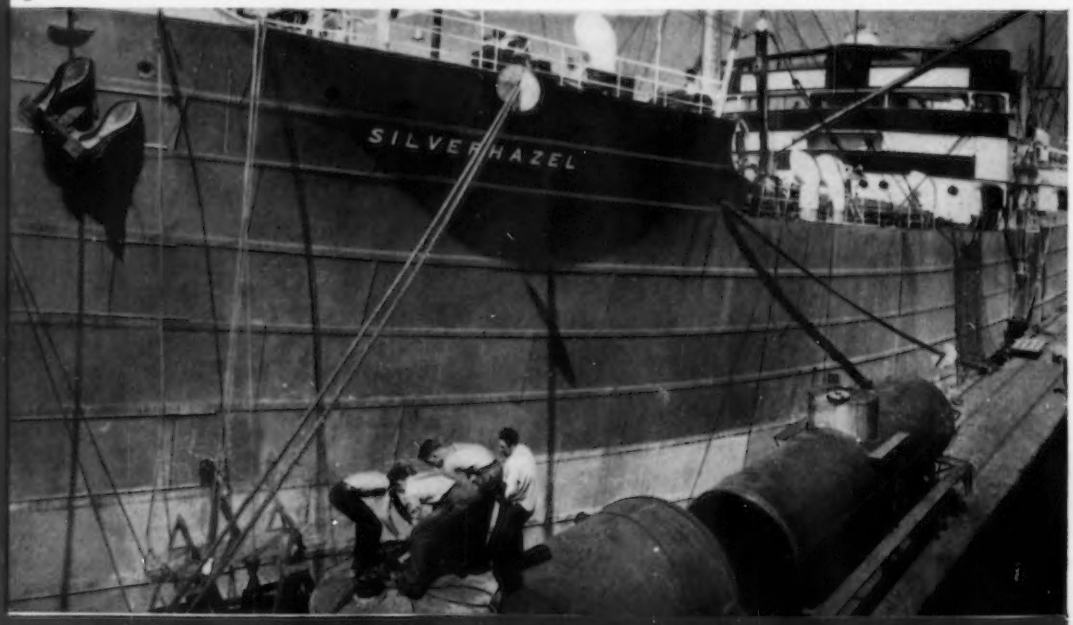
**20—Develop Belt Safety Rules**—provide guards around drives, prohibit personnel from riding on belt, install frequent shut-off switches, equip belt for harmless discharge of static electricity, control dust at transfer points with exhaust hoods, etc.

1 Flow of natural latex is started early in the morning by cutting away a one-fifteenth-inch strip of bark. To prevent spoilage, the latex is collected before noon of the same day.

2 Tank trucks speed latex from collection stations to the central processing plant, where laboratory tests are made and ammonia is added as a preservative during shipment.

# It's Naugatuck for

4 From tanker to tank car, the concentrated latex starts the last leg of its journey to Naugatuck Chemical's strategically located compounding plants where it is again treated by experienced rubber chemists to prepare it for final application.



**3** To prepare natural latex for economical shipping from the Far East, a large percentage of its water content is removed by creaming (skimming) or centrifuging. The centrifuges used are similar to cream separators in appearance and operation.

# Latex...Natural or Synthetic!

Despite the increasing emphasis on Naugatuck's chemically-made rubber latices, don't forget that Naugatuck maintains a steady flow of natural Hevea latex from the United States Rubber Company's extensive plantations in Sumatra and Malaya... delivered to East and West Coast in ample supply.

The method of obtaining this milky white substance from the Hevea Brasiliensis tree is still rather primitive. But, from this point on, the science of rubber chemistry has taken over to insure purer, stronger and more uniform grades of natural rubber latex for foam rubber cushioning and mattresses, elastic yarns, tire cord dipping solutions, adhesive tape, wire insulation, dip molding and many other purposes for which natural latex may be preferred.

Naugatuck offers Hevea latex of the finest quality in four basic types: creamed, low-ammonia cream, centrifuged and super centrifuged. It is shipped in 55-gallon drums or 10,000-gallon tank cars. For details, current prices and technical assistance, contact any of the plants or branches listed below.

**United States Rubber**

**Naugatuck Chemical Division**

**Naugatuck, Connecticut**

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Rubber Chemicals • Synthetic Rubber • Plastics • Agricultural Chemicals • Reclaimed Rubber • Latices • Cable Address: Rubexport, N. Y.

# New Solution to Rotary Digester Bearing Troubles

**Carbon-Graphite bearings proved very successful at Riegel's Warren Glen Mill.**

DRIVE END OF SPHERICAL ROTARY DIGESTER AT WARREN GLEN

Bearing trouble with rotary digesters has been a problem in many mills. This is a report of how Riegel Paper Corp. solved this maintenance and production headache on the drive end journal bearing on a new 14-foot diameter rotary digester at Riegel's Warren Glen, N. J. mill.

This rotary digester prepares pulp stock from hemp rope with a caustic solution. It is a 14-foot diameter steel sphere supported by 14" x 14" cast iron journal bearings. The digester is rotated at 1/5 r.p.m. during the cooking cycle, while steam is introduced through the drive end journal. When filled, there is a static load on each bearing of 32½ ton. Due to the steam pipes passing through, the temperature of the drive end bearing is about 300°F.

Immediately after the digester was placed in operation, Riegel began to experience serious trouble with the drive end bearing. The combination of heavy load, low speed and high temperature caused the breakdown of the grease on the bearings. As a result the journal was very badly scored. Several different high temperature greases were tried, but the gouging out of the drive end journal continued. It became so bad that the digester was shut down after a few runs.

### New Type Bearing

Electro-Nite Carbon Co. was asked to examine the application to see if it would lend itself to the use of a carbon-graphite bearing. In any new application of carbon-graphic bearing materials there are three primary factors that must be considered. They are the temperature, the unit pressure on the bearing, and the product of the unit pressure and the surface speed. In this case the temperature was only 300°F, which was well below the maximum operating tempera-

## What Carbon-Graphite Is

Industry personnel are familiar with one or more uses of carbon-graphite materials such as seals, turbine packing rings and mechanical pump seal inserts. Newer applications are Electro-Nite Carbon Co.'s carbon-graphite non-lubricated journal, slide and thrust bearings.

Electro-Nite bearing materials are dense carbon-graphites produced by mixing various proportions of carbon and graphite and then compressed in dies under high pressures then baked at temperatures of about 1700°F. The resultant product is a homogeneous material with excellent bearing qualities. Graphite is a crystalline form of carbon whose crystals have a unique property. The surface plains are very loosely bound to the rest of the crystal. When pressure is applied to these plains, as on a bearing surface, they slip over each other and align themselves parrallel to the direction of motion.

These surface plains fill in any minor imperfections of the mating parts to further reduce friction and wear. After the initial run-in period, a graphite to graphite sliding surface results. By varying the proportions of carbon and graphite in the bearing material, a wide range of strength and friction qualities can be obtained. The compressive strength of Electro-Nite carbon-graphite materials range from 12,000 p.s.i. to 35,000 p.s.i. The dry co-efficient of friction varies from .04 to .28, and these values are greatly reduced when the bearing operates in the presence of almost any liquid.

Many different applications of E-N carbon-graphite journal, thrust and slide bearings are at present being used. The one reported here has proved of great interest.

ture of 700°F in air. The ideal bearing pressure for carbon-graphite is 50 p.s.i. or less of projected area. Using a 14" x 14" bearing, the unit pressure, with a 65,000 pound load, was 331.6 p.s.i. of projected area. Although, this value was quite high, the PV product was only 243.1 compared to the limiting value of 15,000. Consequently, E-N felt that the bearing had a good chance of working successfully.

These factors were presented to the Engineering Department of Riegel Paper Corp. After considering the alternative, which was a very expensive anti-friction bearing with a forced feed lubrication system, they decided to test the carbon-graphite bearing.

## Bearing Design

The inside diameter of the bearing was designed to allow for proper running clearance after the journal was at operating temperature. This was necessary because of the difference in coefficient of expansion between the carbon and the steel journal. One inch radial thickness was proper for a bearing of this size, and since the length of the carbon-graphite stock was limited to seven inches, the bearing was made in two halves. A one-half inch thick thrust plate was included in the design to carry the thrust load created by the expansion of the digester in operation. Since this bearing would have to be adequately supported, Riegel's engineering department designed and fabricated a steel pedestal that would replace their cast iron bearing block, and on which the carbon-graphite journal bearing and thrust plate could be mounted.

The bearing halves each having nominal dimensions of 14 inch I.D. x 16 inch O.D. and 6¾ inches long, were fitted into the steel pedestal and secured by two hold down bars. The carbon-graphite thrust plate was fastened to one end of the pedestals by cap screws and plate washers.

Riegel and Electro-Nite engineering departments agreed that the poor condition of the journal would adversely effect the life of the carbon-graphite bearing. Correcting this condition would involve machining the journal and fitting a steel sleeve over it. Due to the urgency of the job, they decided to postpone this work until the bearing was tested. To give it as fair a trial as possible, Riegel's mechanical department carefully cleaned the journal with emery cloth to remove any protruding burrs that could damage the carbon-graphite bearing.

## Installation

Installation of the new pedestal and bearing required less than one days' work. The steam pipes to the drive end were disconnected, and the digester was lifted from the bearings by means of chain hoists. The cast iron bearing was removed and the new unit was bolted into position beneath the journal. Lowering the digester and reconnecting the steam lines completed the operation, and the digester was ready to run.

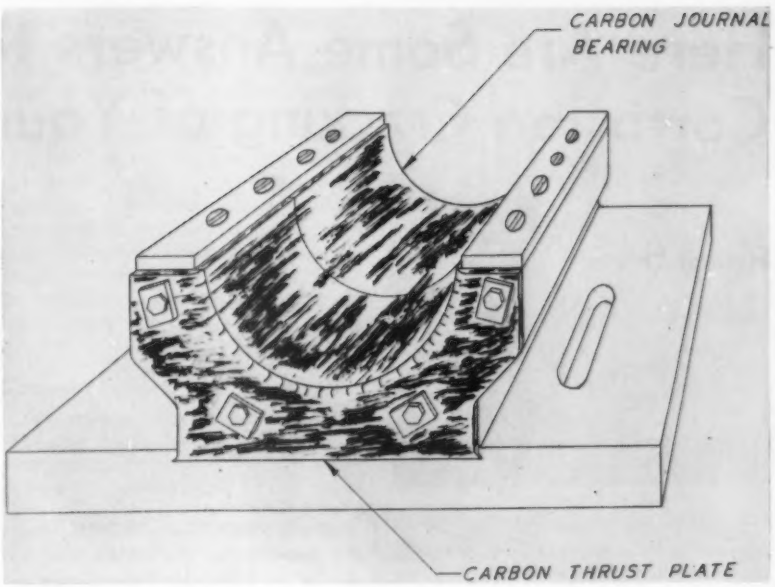
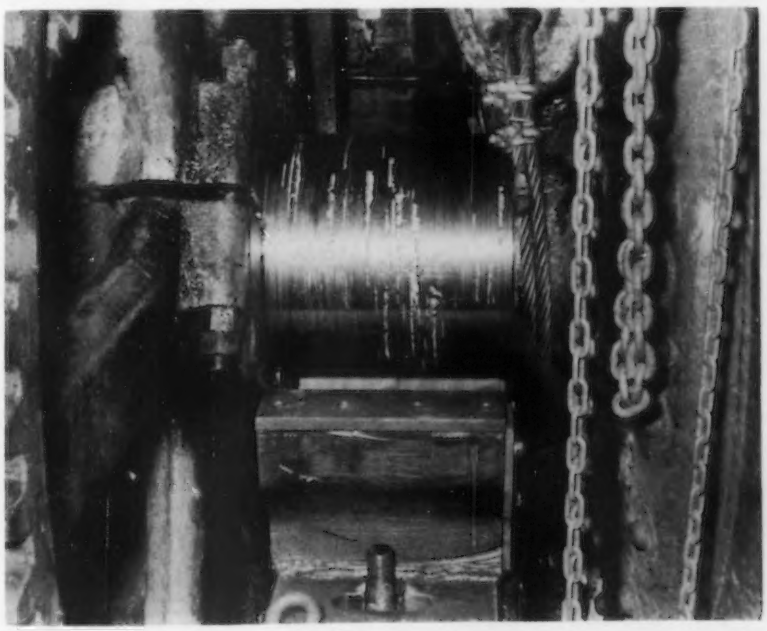



DIAGRAM OF BEARING PEDESTAL WITH CARBON-GRAPHITE JOURNAL BEARING AND THRUST PLATE INSTALLED

The new bearing was placed in service in October, 1954. The wear rate was carefully checked and found to be extremely low despite the badly scored journal. The bearing has been in continual operation for almost one and one-half years with no lubrication or maintenance.



DRIVE END JOURNAL BEING LOWERED ON TO BEARING PEDESTAL NOTE: GROOVES IN JOURNAL

# Here Are Some Answers to Stress-Corrosion Cracking of Your Piping

**Helmut Thielsch**

Metallurgical Engineer, Grinnell Co., Inc.

**Specially prepared in response to the requests for additional information on piping by Paper Trade JOURNAL'S Market and Editorial Research Panel.**

Stress corrosion cracking has been responsible for a very significant number of failures in piping and vessels in pulp and paper mills. It generally has been associated with liquid environments containing chlorides or sulphides. In some instances caustic soda has also caused stress corrosion cracking failures. Even the stainless-steel materials most frequently used in the more severely corrosive environments have not been immune to stress-corrosion cracking. In fact, in a number of instances they have provided no better resistance to failure than mild steels. Typical stress corrosion cracks in Type 304 stainless-steel base metal and in the heat-affected zone adjacent to a weld are shown in Figures 1 and 2, respectively.

Trained metallurgists generally recognize readily stress-corrosion cracking in vessels or piping systems containing acids or caustic. By proper recognition and interpretation of the causes responsible for the cracking recommendations may be made for changes in the design of the vessels, the piping system, or the joint details, and in the selection of the materials involved. This may prevent further service failures by stress-corrosion cracking.

Stress-corrosion cracking is also fairly common in the power plants and steam generating and transmission systems of pulp and paper mills. The steel piping generally used to convey the water or steam is generally assumed to be completely immune to failures by corrosion.

Stress corrosion failures in service in water and steam piping systems occur most frequently within or near welds. Since no consideration is given to possible stress-corrosion, "defective" welding is usually blamed as the only reason for the failure. Not recognizing that the actual cause of the failure is due to stress corrosion, the repair weld made is usually a "patch-up" job which is of no better quality than the original weld. Recurring failures are likely to develop in less time than the original failure.

One difficulty in recognizing stress-corrosion failures in water and steam piping is that they frequently appear to be only "pin-hole" type leaks through which steam or water "oozes" out at a gradually increasing rate. Only when a radiograph is made of the joint does it become apparent that cracking is actually involved with the "pin-hole" leak representing the spot where the peak of the crack first traversed the wall thickness of the joint. Figure 3 shows a radiograph of a carbon steel pipe joint containing the pinhole leak and the stress-corrosion cracks. The cracks had not penetrated to outer surface of the weld and there was no visible indication that cracking had actually occurred. The radiograph also indicates pitting on the inside of the pipe which is frequently typical of service environments causing stress-corrosion cracking.

## What Is Stress Corrosion on Cracking?

Stress-corrosion cracking is a particular type of cracking caused by the combined action of corrosion and stresses.

Corrosion alone would not produce

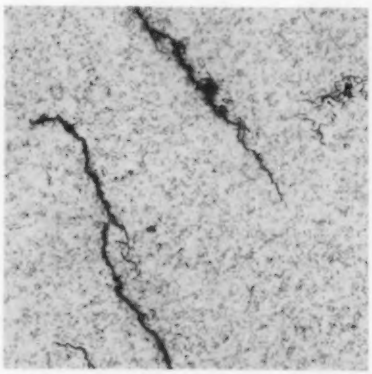


FIGURE 1—Microstructure of typical stress-corrosion cracking in Type 304 stainless steel.

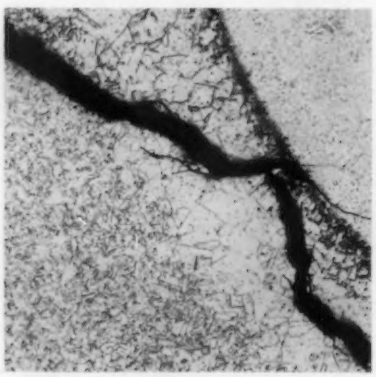


FIGURE 2—Stress-corrosion crack in heat-affected zone of Type 304 base metal adjacent to stainless-steel weld deposit.

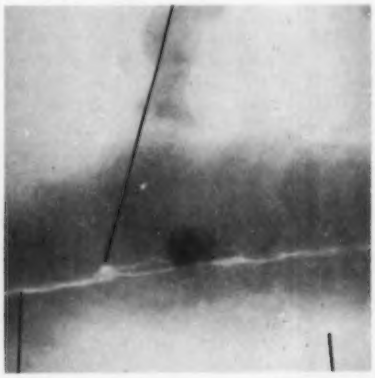


FIGURE 3—Positive copy of X-ray radiograph showing pinhole leak, crack and corrosion pitting in butt weld in carbon steel boiler feed water piping.

failure by cracking. Conversely, in the absence of corrosive attack the stresses present in the material would not produce failure.

In the design of piping the effects of corrosion and stresses are generally considered as separate functions. For example, first a piping material is selected to resist the corrosive effects of the solution which is to be conducted thru the piping system. Subsequently the proper size and thickness of piping is specified to meet the Code requirements as the basis of proper stress calculations. However, since the combined action of stresses and corrosion was not considered, failure may nevertheless occur.

Specifically, *stress-corrosion* cracking is the result of corrosion and static tensile stresses. When cyclic stresses are involved the process is frequently more aptly described as *corrosion fatigue.*

Stress-corrosion cracking is either initiated or enhanced by local corrosive attack which provides stress concentrations at the resulting pits, crevices and notches. Typical stress-corrosion cracks originating at "pits" containing corrosion products are shown in Figure 4.

The susceptibility of a material to stress-corrosion cracking depends upon the effects of 1) the tensile stresses in the material (static or fatigue), 2) the action of the corroding agent, 3) the presence of surface notches, 4) deformations or distortions within the material, 5) the physical characteristics (internal metallurgical structure) of the material and 6) the length of exposure to the corrosive environment.

## Stresses

As stated earlier the presence of tensile stresses is one of the two principal factors which may cause stress-corrosion stresses. The stresses may be of internal nature or may be caused by external loads — the two types acting additive.

Internal stresses can be caused by welding, by unequal cooling from elevated temperatures or by internal metallurgical transformations involving volume changes. Other hot or cold fabricating operations as forming, bending, upsetting, bolting, riveting and press or shrink fitting may alse introduce residual stresses of significant magnitude. Extremely critical are also surface notches which, at the apex of the notch, can result in very severe notch concentrations. In addition the notch frequently permits deposition of impurities or chemical elements which may cause further corrosive attacks.

In most cases the internal stresses are of greater practical importance than external stresses. With few exceptions, operating pressure stresses ordinarily are sufficiently low to be of comparatively little importance, except as they add to the internal stresses.

The minimum stress necessary to cause stress-corrosion cracking depends primarily upon the type of corrosive environment and the length of service. Generally tensile stresses approaching the yield strength of the steel are believed to be necessary. However, some failures have occurred at very much lower stress levels, but in far more severely corrosive solutions than would be necessary to cause cracking at the higher stress levels.

## Corrosion Fatigue

In corrosion fatigue the stresses which primarily cause failure are associated with externally applied fatigue loads, as result from mechanical fatigue. Vibrations in a piping system caused by a compressor have been found in a number of instances the major factor contributing to corrosion fatigue. Actually the vibrations may not be very severe; however, acting additive to already existing internal tensile stresses, the mechanical fatigue may bring the stresses beyond the level at which cracking occurs.

In corrosion fatigue the corrosion lowers the endurance limit of the steel (associated to the "roughening" of the surface by corrosion and, in severe cases, notch formation), and the fatigue accelerates the corrosive attack. In most environments where corrosion only occurs the corrosive products and films which form tend to block or retard the corrosive attack or may even cause it to cease completely. In corrosion fatigue, however, the cyclic stresses tend to rupture and render more permeable than protective areas.

Because of the mutually accelerating nature of corrosion and fatigue, a larger number of solutions and at lower concentrations can cause corrosion fatigue than can cause (static) stress-corrosion cracking alone.

Even though the stress level applied is below the fatigue limit characteristic of the steel, notches, cavities and other defects which act as local stress raisers support local distortion (plastic deformation). In the absence of corrosion, the distortion (work hardening) in the structure raises the elastic limit in this area. In due course, the affected area subjected to alternating stress of a given magnitude (below the fatigue limit) will resist further distortion due to the increase in the elastic limit. If, however, a corrosive agent is present, the distorted structure formed locally may become susceptible to corrosive attack. The contrast between distorted and undistorted structures can be significant so that the latter remains unattacked. The combined chemical-mechanical action causes

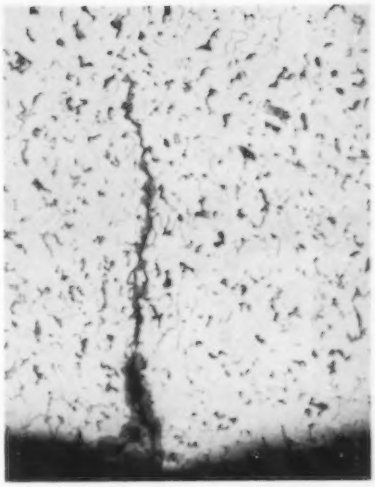


FIGURE 4—Stress-corrosion cracks in steel base metal near weld originating from "pits" containing corrosion products in steam piping from desuperheater.

FIGURE 5—Transgranular path of stress-corrosion crack along slip planes due to corrosion fatigue.

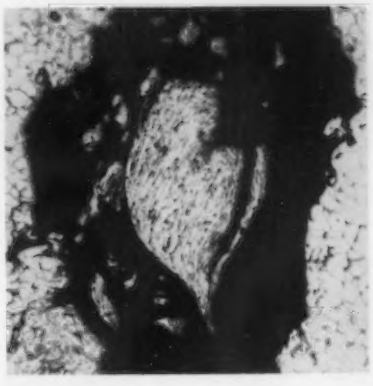


FIGURE 6—Severe distortion along crack due to corrosion fatigue.

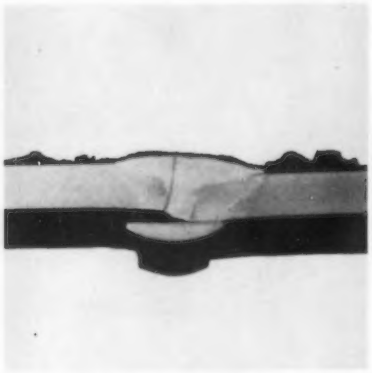


FIGURE 7—Stress-corrosion cracks in weld in low-temperature (400° F.) steam piping starting at notches resulting poor fit-up of pipe sections.

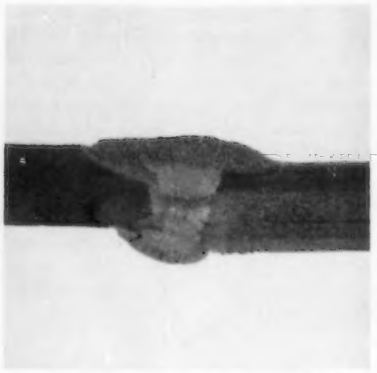


FIGURE 8—Stress-corrosion cracks in steam header base metal originating at notch formed between base metal and weld.

FIGURE 9—Stress-corrosion crack in weld in low-temperature steam piping originating at notch formed by lack of penetration at root of weld.

very fine cracks to advance inward — frequently along slip planes in a transgranular pattern, Figure 5. Severe distortion of the metallurgical structure in the affected area may be further evidence that corrosion fatigue has occurred, Figure 6.

At elevated temperatures corrosion fatigue is sometimes associated with oxidation where failure occurs by oxide formation and thermal fatigue.

## Effects of Steam and Water Composition

Stress corrosion cracking in steel piping conveying water or steam is extremely rare in the power plants of the public utilities. In these, of course, considerable effort is devoted to water treatment, and the water used and steam produced are relatively pure.

In the power and steam plants of pulp and paper mills considerably less effort is generally devoted to water treatment. Moreover, the water used in steam generation is frequently already slightly "contaminated" by traces of chlorides and sulphides, present in the water supply. Occasionally caustic has been pumped into the feed water piping which may deposite corrosive products in existing crevices.

Even where the water may be treated and purified, the occasional use of water containing contaminants such as chlorides and sulphides may result in deposits and concentrations of these substances in crevices. These local concentrations may result in further local corrosive attack, regardless of the purity of the water or steam flowing through the system subsequently.

## Joint Preparation

In piping systems carrying water or steam which may cause stress-corrosion cracking, the most important factor contributing to stress-corrosion cracking is the condition of the butt welds along the inside of the piping. Poor fit-up tends to form notches which act as stress concentrations and support the initiation of stress-corrosion cracking. A typical example of a cross section of a pipe weld which failed by stress corrosion cracking is shown in Figure 7. The crack originated at the two locations where stress concentrations were the highest. The poorly fitting backing ring which was of little actual help in welding may have further aggravated the susceptibility to stress corrosion by allowing corrosive deposits to form in the crevices. Weld joints having good fit-up and tightly fitting backing rings showed no cracking under the same service conditions.

Poor fit-up in welds on steam headers even though they have been welded from both sides may also provide notches, in which stress-corrosion cracking can originate, Figure 8.

Improperly fused welds resulting in "lack of penetration" at the root of the weld also are a major cause initiating stress-corrosion cracking. In the example shown in Figure 9 corrosive products deposited in the lack of penetration area at the root of the weld and, in time, initiated and propagated stress-corrosion cracking. No stress-corrosion cracking occurred in joints in the same service environments exhibiting complete penetration around the circumference of the weld.

Since notches in the weld deposit represent probably the most important single factor in water and steam piping systems causing stress-corrosion cracking, proper weld preparation becomes extremely important.

Where service environments are involved which may cause stress-corrosion cracking the best insurance against failure is to employ welding procedures which provide full penetration welds and smooth and uniform root contours as made

1—by shielded metal-arc welding against tightly fitting backing rings, or

2—inert-gas tungsten-arc welding of the root pass followed by shielded metal-arc welding of the balance of the weld[1]

Since special internal machining and fit-up techniques may be involved in these procedures significantly higher welding costs may result than would ordinarily be considered necessary for low-pressure steam and water lines used in pulp and paper mills. On the other hand, periodic operational shut-downs necessitated by continued repair of "patched-up" welds can be very much more expensive.

Properly trained and supervised welders are also essential to produce quality welds. Not every fabricator has the personnel and know-how to produce the high-quality required. This too should be considered in pipe fabrication. Too often price is the only consideration in selecting pipe fabrication with the consequence that the piping erected "cheaply" may sooner or later suffer from a serious epedemy of joint failures and may have to be replaced completely at a considerably higher cost.

Other factors which also may help to inhibit stress-corrosion cracking in steel piping are:

1—Change in water or composition to reduce presence of elements promoting stress-corrosion cracking.

2—Proper location of anchor points, hangers and supports in the piping system to minimize tensile stresses.

3—Reducing mechanical vibrations and service conditions causing thermal fatigue.

4—Stress relieving of weld joints consisting of slow heating and cooling uniformly around the circumference of the weld.

[1] "Engineering Aspects of Inert-Gas Tungsten-Arc Welding of Piping" by H. Thielsch and C. S. Pulliam. Welding Journal, Vol. 34, pp. 1185-1195 (1955).

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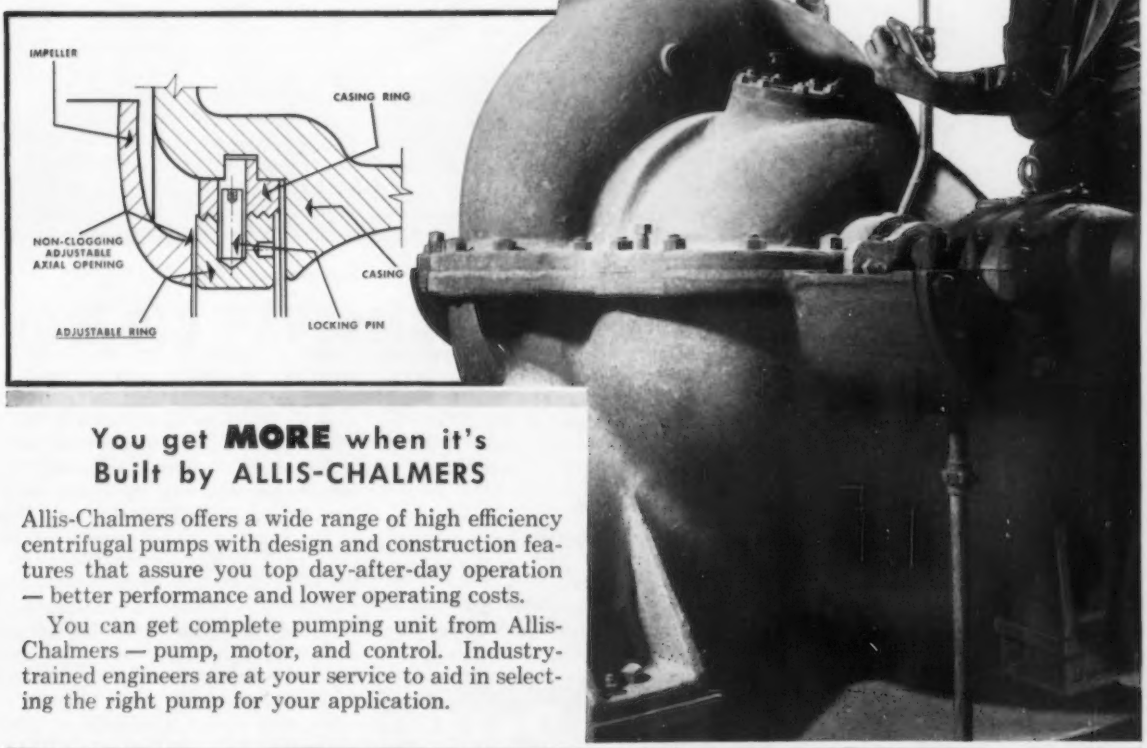


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# How to Measure Wood in Moving Conveyors . . .

- The need of measuring wood in a moving conveyor is discussed.
- Past failures in counting are reviewed.
- A photographic sampling method, to determine total pieces, is described.

**R. G. Belcher and W. H. Martin**
Canadian International Paper Co.

One of the persistent and, we have thought, hitherto unsolvable problems of the pulp and paper industry has been that of determining the volume of wood carried by a moving conveyor, without seriously interrupting its flow. Such volumetric problems are encountered where wood enters a mill from the river, where it passes from the block pile to the groundwood mill, and where it enters the woodroom for chipping. At any of these busy spots the definition of a "serious interruption" of the flow seems to be any interruption whatever.

Attempts have been made in the past to solve this measurement problem by direct and indirect methods. The logical, straightforward solution seemed to be to have a man count the pieces, determine the average volume per piece by sample scale, and combine the two to determine the total volume. This has been tried repeatedly, and usually with little success. About the same time we learned that it was impossible to ask *one* man to sit beside a conveyor hour after hour and count blocks of wood in endless succession, the woodyard and barking plant experts increased the capacity of all wood handling equipment. We found that not even four or five men could do the job, let alone one.

### Photo-electric counters

The perfectly obvious solution at this point was to use photo-electric equipment. Like many "obvious solutions," it did not work. Strips of bark covered the light source, and the recorder showed no count. An air jet, designed to keep the light source clear, worked fine, until a strip of bark caught at one end and fluttered across the light beam, yielding a splendid, but false, increase in production. A moth miller, attracted by the light, had no difficulty in doubling the indicated number of pieces. A chip or twig registered as a log; and two logs, with no space between them, registered as one. Even with vastly improved electronic equipment the latter difficulty has not been overcome.

### Mechanical counters

Mechanical counting equipment, basically a finger activated by each passing bolt, also proved inaccurate. Two bolts, close together, registered as one, or small bolts did not register at all. When the machine was set to count small bolts, it also included worthless branches.

### Vibration recorders

Vibration recorders kept a fine record of the time during which wood was passing over the conveyor, but failed to indicate changes in volume. Attempts to correlate volume moved with power consumption also failed.

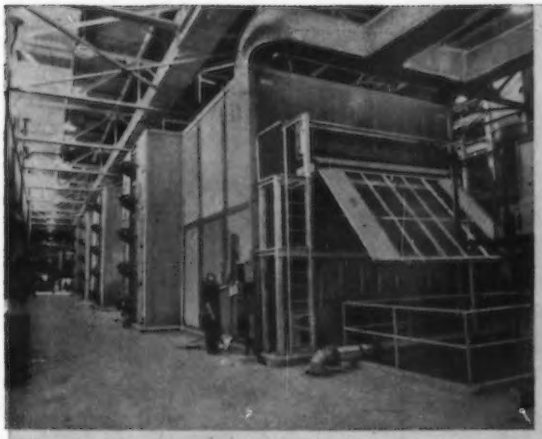
In short, the only thing that seemed to promise any accuracy at all was a trustworthy and capable man. Unfortunately, as stated above, an efficient and high capacity operation made even such a man's best efforts inaccurate. Thus, the real problem was to find a way to use man's discriminatory vision, but to avoid the failure resulting from monotonously continuous high pressure. Naturally, it would be highly desirable to develop a method of known or estimatable accuracy.

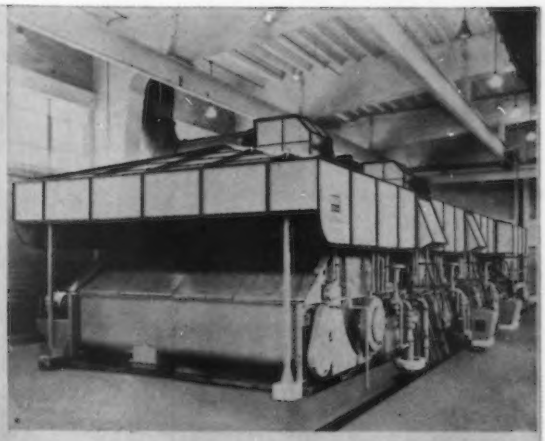
The photographic solution to this problem was originally proposed by A. Côté and P. J. Hurley, who, together with H. Simard and the authors, developed and applied the techniques at Canadian International Paper Co.'s La Tuque Mill.

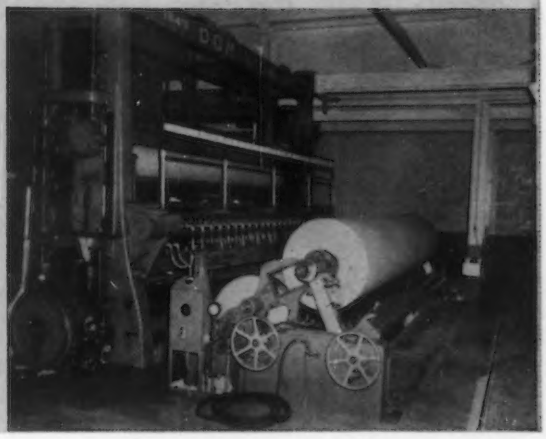
### Sampling problem

Such thinking pointed toward sampling. We already knew of the excellent results obtained by the manufacturing industries in quality control based on sampling theory, subject to statistical analysis. We were convinced that small samples could be counted more accurately than the entire "population." So the first attack was to count timed samples and apply the total running time of the conveyor to the average of the samples. This would presumably reduce the strain on the men doing the counting, and therefore increase their accuracy. In slow moving, lightly loaded conveyors very little difference between total counting and sample counting develops. Men can apparently count either samples or totals with ease. Up to 2,500 or 3,000 pieces per hour can be handled quite accurately, if the conveyor is wide enough to spread the load not more than two pieces deep. Certain techniques were developed which made this process easier.

Unfortunately, for counting, at any rate, the number of slow moving, lightly loaded conveyors becomes less and less as wood handling efficiencies improve. Since this batch counting technique is







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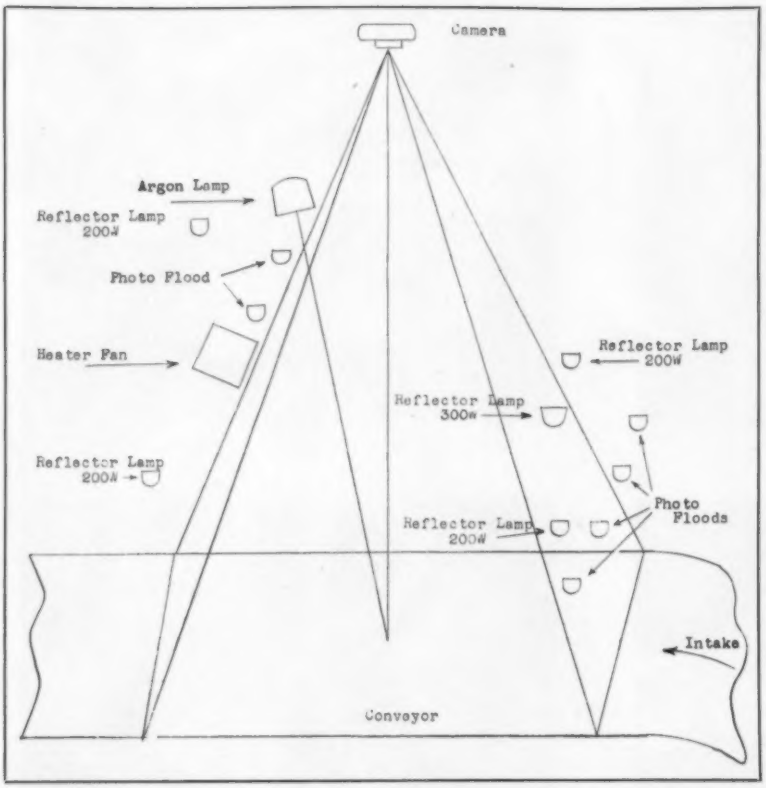



FIGURE 1—The relative position of the camera and the conveyor.

distinctly limited to such conveyors, some other method had to be devised.

The idea of sampling, in conjunction with man's discriminatory vision, still seemed to be the proper approach. It was now evident, however, that the wood must be held still long enough to count it. We could not stop a conveyor or river long enough to count a measured section. This would interrupt the flow, and increase wood handling costs.

## The Solution—a camera

The answer, absurd in its simplicity, was to photograph the wood in a measured length of conveyor, and count it at leisure. The advantages of this are many. It does not interfere with the flow of the wood. It is subject to definite check. Photographs can be taken in full accord with the principles of random sampling and, therefore, the results are subject not only to verification, but also to statistical analysis. The equipment is relatively inexpensive and requires not great skill to operate after it has been set up. Human errors are reduced to a minimum, but the great advantages of discriminatory human vision are fully utilized. And finally, one man can do all the counting for both day and night shifts. He can also handle the photo-developing quite easily.

To convert the results of the count to volume calls for further sampling, of course. A portion of the bolts must be measured to establish the average volume per piece. This can be done by drawing off small samples, measuring them, and returning them to the general body of wood passing over the conveyor. If the volume of wood used in a groundwood mill is required, this sample scale can be made, in a random manner, on the charging floor. If the wood is to be chipped, small samples can be diverted at a transfer point. Where wood is to be taken from a river into a barking plant, a small pocket boom and light jack ladder should be used for the sample scale. Since a sample scale involves no new techniques, we will confine ourselves to a description of the photographic sample counting method and the statistical analysis of the results.

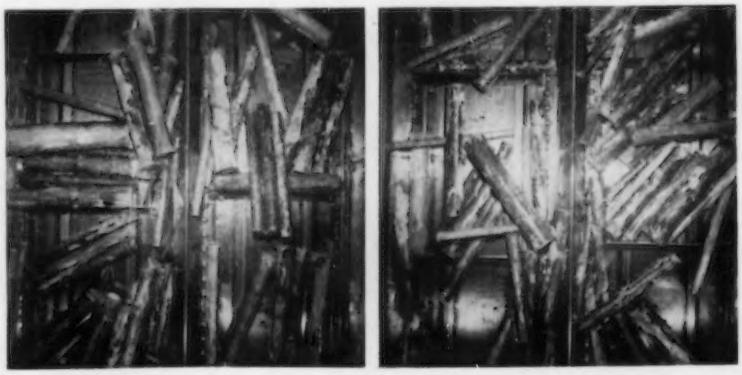
## Installation

The sorting installations in the river immediately above the Canadian International Paper Co. mill at La Tuque appeared to be the most satisfactory available for an experimental installation of the camera. At this point wood owned by Consolidated Paper Corp. and Canadian International Paper Co. is separated by ownership on a relatively complex sorting machine. Immediately below this machine, C.I.P. wood is lifted from the water on a conveyor approximately forty feet in length and twelve feet in width and then dumped back in the water. Since this conveyor was designed and used as a point for visual counting in the traditional 100 per cent manner, it was an ideal place for camera installation. This does not mean, however, that a camera may be installed on only a special conveyor or jackladder constructed for this purpose. Any jackladder or conveyor, on which at least part of each piece may be seen, can be used.

Figure 1 illustrates the installation and relative position of the camera and the conveyor; the equipment used is described below. It will be noted that the camera is mounted above the conveyor and pointed directly at it.

## Camera used

The camera available was a Robot-Royal III using 35 mm. film, with rangefinder and full flash synchronization. A built-in spring motor operated the camera shutter and advanced the film automatically after each exposure. A wide angle lens provided photographic coverage 13 feet square at a distance of 16 feet, which arbitrarily determined the sample size for experimental purposes.



FIGURES 2 AND 3—Typical photos used for computing.

A timer, connected to the conveyor controls, and activated only when the conveyor was running, operated a cam, which in turn, at specific timed intervals, energized remote controls of the camera which actuated the camera shutter and lighting system.

A argon lamp and four reflector lights provided the main lighting. In addition, six photo-flood lamps were used. Their positions are shown in Figure I. Some difficulty was experienced with fog, particularly in the morning. To prevent this, a hot-air fan was installed. In order to eliminate adjustments of shuter settings and speed, the whole installation was enclosed in canvas, cutting off the variable natural light.

Cost per shift for film and developing chemicals was $0.52. The camera and lighting equipment, costing about $500, was handled by one man who also developed and counted the pictures for both day and night shifts. An operating foreman rewound the camera spring motor every three hours during the night shift.

The number of revolutions of the main conveyor shaft was determined through a solenoid operated counter, the switch of which was on the main shaft.

## Operation

The timer was arbitrarily set to expose one frame of film at 9-minute intervals, which is equivalent to 67 pictures per 10-hour shift with no shut-downs. The frequency varied slightly because of reduced conveyor speeds under heavy loads. The number of pictures varied with the actual running time of the conveyor. A 9-minute interval was arbitrarily chosen on the basis of estimated variations in the number of pieces in a 12-foot length of conveyor.

Developed negatives were placed in a small projector. Each pulpwood bolt appearing completely within the image was counted; those appearing only in part at one end were included in the count, while those appearing in part on the other end were excluded. Typical photos are shown as Figs. 2 and 3. The results of all exposures for a shift were listed and the average per shift computed.

## Calculations

The production for the shift was determined as follows:

$$S = PRA/L$$

Where

- S = total pieces for the shift.
- P = pitch of main sprocket in feet.
- R = number of revolutions of the main sprocket for the shift.
- A = average number of pieces counted per exposure for the shift.
- L = length in feet of conveyor appearing on photo frame.

"P" may be determined by counting the number of teeth on the main sprocket and measuring the length of an equivalent number of links on the conveyor.

The determination of "L" is somewhat more complex because all the wood on the conveyor does not ride in the same plane, hence a parallax effect is introduced. A datum plane was assumed six inches above the plane of the conveyor. A graduated rule was supported in the datum plane and photographed, and "L" thus determined once and for all.

Since "P" and "L" are constants the formula resolves into the form:—

$$S = YRA$$

Where

Y = The constant P/L

It is fully realized that the assumption of the datum plane six inches above the plane of the conveyor is not an exact solution to the parallax problem. Although the difference between this and a theoretically sound solution is of academic interest only, other methods of overcoming it are possible.

One of these is to raise all the lighting to the same level as the camera and restrict the lighted area of the conveyor by placing baffles of specific lengths on either side of each light. These baffles will throw a distinct shadow across the wood in the conveyor at each end of the counting area, thus determining "L" exactly for all elevations of wood.

A second involves the use of special lenses of specific radii positioned immediately under each light, which will restrict the light rays to certain areas, thus accomplishing the same result as the baffles.

## Accuracy

Before analyzing the results of this experiment, we must, in accord with statistical theory, assure ourselves of the "randomness" of our sampling. A random sampling is one in which each individual in the total population being tested has an equal and unbiased chance of being drawn for measurement. In our case, the population was made up of the number of pulpwood bolts in a continuous series of 12 ft. 2 in. lengths of the conveyor. Our "measurement" consisted of counting the bolts of wood in each of a number of these sections. Samples were drawn—that is, photographs were taken—at nine minute intervals of conveyor operating time. This appears to be a mechanical rather than a random sampling. However, because the men loading the conveyor had no way of knowing at what split second the photograpshs would be taken, they were in no position to "bias" the loading. Moreover, the flash lighting, synchronized with the camera operation, was shielded from them, so that at no time could they know when a picture would be taken. They were thus physically unable to load more or fewer bolts on the conveyor for any one particular sample. We can, therefore, accept our samples as unbiased and random.

In our analysis we answer the following questions:

(1) Within what limits from our sample average does the true population average lie, unless a one in one hundred chance (1 per cent) has occurred in the drawing of our samples?

(2) How many samples should we draw to meet a predetermined "fiducial limit" at a predetermined "confidence level?"

We can only give answers applicable to this specific cases. Other situations must be analyzed on the basis of their own data. The techniques used can be found in any text book on "Statistical Analysis."

On each shift we took from 38 to 63 pictures, depending upon the total operating time of the conveyor. Each sample

TABLE I—RESULTS OF TEST

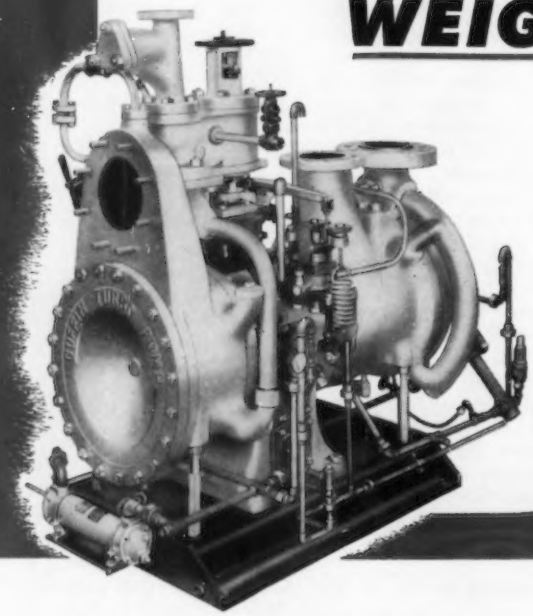
| Shift or Period (D-Day) (N-Night) | Number of Samples (Photos) | Ave. No. of Bolts per Sample | Fiducial Limits at the One Per Cent Confidence Level (Plus or minus from average) Pieces | Per cent of Averages |
|---|---|---|---|---|
| Aug. 17 N | 61 | 15.9836 | 2.6148 pcs. | 16 |
| 18 D | 58 | 23.1379 | 2.8835 | 12 |
| N | 56 | 24.5714 | 3.3282 | 13 |
| 19 D | 65 | 23.9231 | 3.5949 | 15 |
| N | 59 | 23.3051 | 3.6230 | 16 |
| 22 D | 57 | 21.4386 | 3.3924 | 16 |
| N | 59 | 21.3559 | 2.8984 | 14 |
| 23 D | 58 | 21.9655 | 3.1607 | 14 |
| N | 61 | 19.0820 | 2.8675 | 15 |
| 24 D | 43 | 22.3721 | 3.0892 | 14 |
| N | 56 | 22.0893 | 3.4884 | 16 |
| Week | 633 | 21.7093 | 0.9616 | 4.4 |
| Aug. 25/21 | 572 | 20.6504 | 1.0004 | 4.8 |
| Sept. 1/7 | 562 | 22.7882 | 1.1090 | 4.9 |
| Sept. 8/15 | 782 | 23.7570 | 0.8989 | 3.8 |
| Month | 2549 | 22.3378 | 0.4981 | 2.2 |

SAVE

SPACE

STEAM

WEIGHT



Type DEB
2-stage unit

**With Dependable COFFIN Turbo Feed Pumps**

Matched pump, turbine and governor are compactly designed and precision built as an integral unit to assure years of dependable performance—in minimum size, with low steam consumption. Widely used for boiler feed service in refineries, chemical plants, paper mills and general industry, the well-known line of Coffin Turbo Pumps offer Volumetric Ranges to 800 gpm, Discharge Pressures to 1500 psig, Steam Temperatures to 950° F., Exhaust Pressures to 200 psig, and Liquid Temperatures to 325° F. For special installations these ratings may be exceeded.

**ENGINEERS . . . write today for complete specifications on the entire line of Coffin Turbo Pumps.**

THE J. S. COFFIN JR., COMPANY

TURBO PUMPS

129 South View Street, Englewood, New Jersey • Cable Address: JSCO

Representatives In the United States, Canada, Europe, and the Far East


contained from 0 to 50 bolts, with a large number falling between 15 and 28.

Day to day results showed that unless a one in one hundred chance in drawing samples had occurred the true average would not lie further than 23 per cent from the stated average. This is much too wide a fiducial limit even at the one per cent confidence level. However, day to day results are not necessary in this case. We are more interested in monthly volumes, and most interested in the yearly volumes. Therefore, we combine our daily findings to determine totals for a greater period.

Table I shows the result of our tests by days, weeks, and the full month over which the test was run.

The week listed above, day by day, is typical of the other three weeks given in summary only. The final result shows that our fiducial limits at the one per cent confidence level are well within our arbitrary standard of plus or minus 2.5 per cent on a monthly basis.

Using recognized statistical techniques we can extend our findings still further, and show that, for the full season of 120 days our fiducial limits at the one per cent confidence level will probably be plus or minus one per cent. This assumes, of course, that our 23-day test was representative of the whole season.

Incidentally, the above results indicate that the arbitrarily chosen nine-minute interval between exposures and the 12 ft. 2 in. size of sample both meet our requirements. Both may be varied to suit accuracy requirements or conveyor loading variations different from those experienced in this test.

## Summary


As the value of wood increases, its measurement becomes more and more important. Attempts to either measure or count large volumes of wood in rapid motion by any "one hundred per cent" method had failed. Sampling is, therefore, the only solution available at present. Photographs of the wood lying within a predetermined length of conveyor can be examined under ideal conditions. Averages of piece counts per section applied to the total length of a conveyor passing a given point will give an estimate of the total pieces carried. The accuracy of this estimate can be appraised by statistical techniques. Average piece volumes can be determined by measurement of other samples. The combination of the sample count and sample measurement establishes the total volume of wood conveyed. Relative accuracy can be increased or decreased by varying the size or number of samples taken, in accordance with statistical principles.



From a paper presented at the Annual Meeting of the Woodlands Section, Canadian Pulp and Paper Assn., in Montreal, Quebec, March 27, 28, 29, 1956.

# "Beckman pH Control helps us exceed production goals three ways"

*says: Herbert M. Kennedy,*
*Instrument Supervisor,*
*East Texas Pulp and Paper Company*

In this new 300 ton-per-day paper plant at Evadale, Texas, Beckman pH instrumentation has helped extend production beyond design capacity by automatically controlling pH at three vital points:

**1** *Boiler Feed Water.* Feed water is maintained at a pH of 8.5 to prevent erosion of boilers, valves, and feed pumps. Maintenance and replacement costs are substantially reduced.

**2** *Raw Stock Storage Tank.* Bleached wood pulp is properly conditioned when kept at a constant 7 pH in storage. "Automatic around-the-clock pH control gives us a consistency and reliability impossible by manual control," Kennedy states.

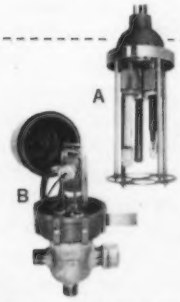
**3** *Stuff Box on paper processing machine.* Proper pH control here is essential to prevent paper machine gumming, product rejection and reprocessing. Stock solution pH ranges from 4 to 7 depending on type of paper being run and Beckman instrumentation holds values within ±0.1 pH unit.

Wherever there is water, there is pH. Wherever there is pH, Beckman instrumentation can provide reliable automatic control that will upgrade product quality and process efficiency.

**BECKMAN pH CONTROL CONSISTS OF THREE ELEMENTS:**

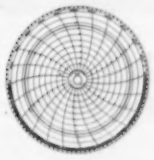
**1**

**The pH Meter** is rugged, dependable, moisture-proof. One meter may monitor many different points in a process stream and may be located as far as 200 feet from pH electrodes.




**2**

**The electrodes** are virtually unbreakable, require very little care, are pressurized if desired and may be mounted in Immersion Assemblies (A), or Flow Assemblies (B).



**3**

**The recorder** or recorder-controller may be any leading make.

**Beckman**® / *process instruments*

*Beckman Instruments, Inc.*
*Fullerton 1, California*

☐ Send a pH System Analysis Form that entitles me to a free engineering analysis for solving pH problems at our plant.

☐ Send a copy of "Industrial pH Measurement & Control."

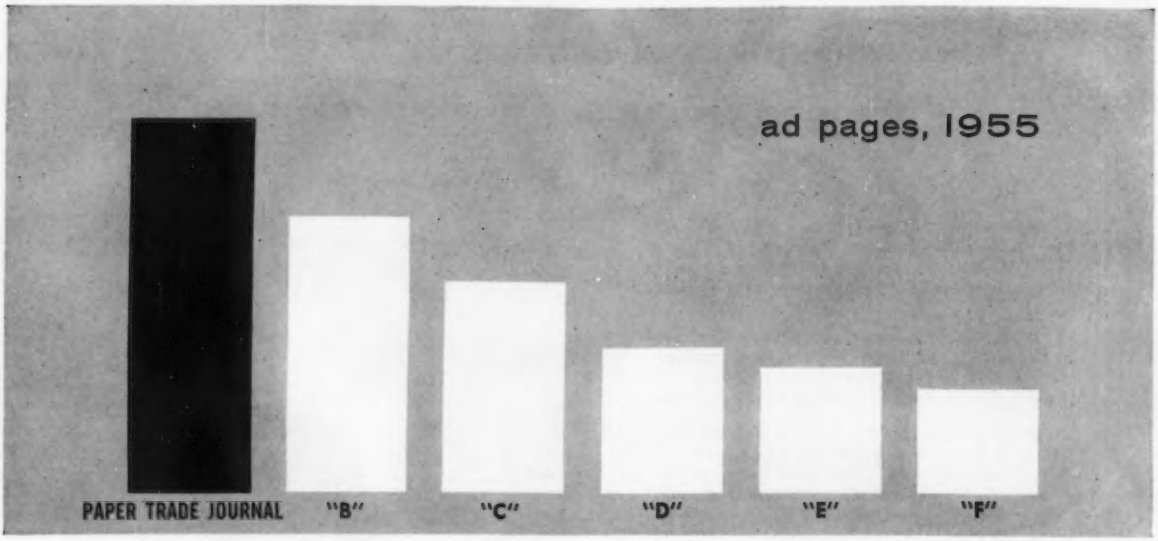
*Name*_____ *Title*_____

*Firm*_____

*Street*_____

*City*_____ *Zone*____ *State*_____

N6-16




# why advertisers consistently invest more in PAPER TRADE JOURNAL than any other publication in the pulp and paper field

As would be expected, there is no single answer to PAPER TRADE JOURNAL's leadership in number of ad pages, as shown in the chart above. PAPER TRADE JOURNAL has earned the confidence of advertisers because it—

- enjoys a renewal rate that is the highest in its field—over 80% for the past 20 years—in spite of having the highest subscription price
- covers all sections of the country, in fair proportion to the location of paper mills
- carries the most "want ads" run by paper mill men. (These ads, often paid for by individuals, reflect their first-hand appraisal of the best-read publication in their own plants.)
- leads in mill readership, particularly among production executives
- presents over 2,000 editorial pages per year, much of this original articles by outstanding authorities in the field
- ranks highest with mill readers, according to reader surveys
- provides ABC circulation statements
- offers advertisers basic market data on the pulp and paper field, and in specific groups of products used extensively in the field

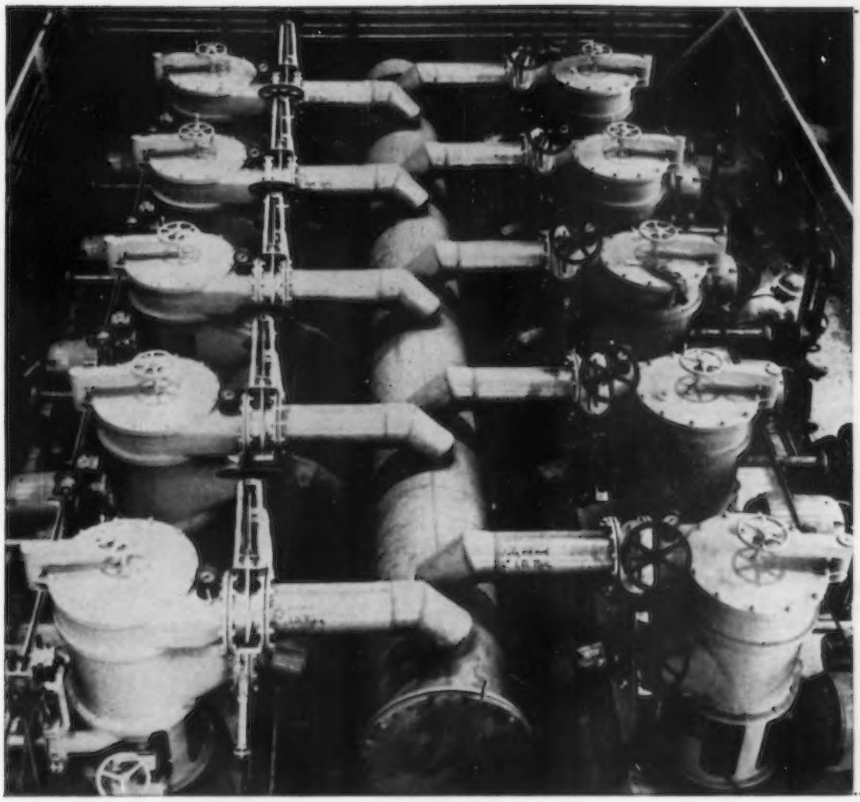
So, naturally, advertisers invest more in PAPER TRADE JOURNAL than in any other publication in the pulp and paper field.

**PAPER TRADE JOURNAL**

*"the most useful paper"*

*15 West 47th Street, New York 36, N. Y.*

PITTSBURGH • CHICAGO • DENVER • HOUSTON • SEATTLE • SAN FRANCISCO • LOS ANGELES



Top corrosion resistance is built into this inlet header, and the discharge header beneath it, with Armco Stainless Steel sheets (Type 316L). The equipment is installed in Great Northern Paper Company's paper mill at East Millinocket, Maine. Eventual production of this modern mill is expected to exceed 900 tons a day.

# Great Northern Mill Specifies Armco ELC Stainless

## For Longer Equipment Life

Engineers for the Great Northern Paper Company, East Millinocket, Maine, specify ELC Stainless Steels where corrosion is severe. This is why:

ELC means "Extra-Low Carbon" (.03% maximum) . . . and low carbon guards against intergranular corrosion alongside the weld areas. So equipment gives trouble-free service, lasts longer.

Most of the processing vessels in Great Northern's mill are stainless steel. And for good reason. According to one of the company's engineers, "Stainless steel equipment has a much longer life than that made from any other material we use, and also is easier to keep clean and free of slime."

### See Your Supplier

It will pay you to check with your equipment supplier about the use of Armco ELC Stainless Steels for vats, head boxes, white water lines, chemi-cleaners—wherever corrosion alongside the weld areas can be a problem.

If you'd like more information about Armco ELC Stainless Steels, just write us at the address below. We'll be glad to send you a copy of the Armco booklet, "A Stainless Profit Story for the Pulp and Paper Industry."

We look forward to greeting YOU at—

**37TH ANNUAL CONVENTION**

AMERICAN PULP and PAPER MILL SUPERINTENDENTS ASSOCIATION

JUNE 12 to 14
LAKE PLACID CLUB
ESSEX COUNTY, N.Y.

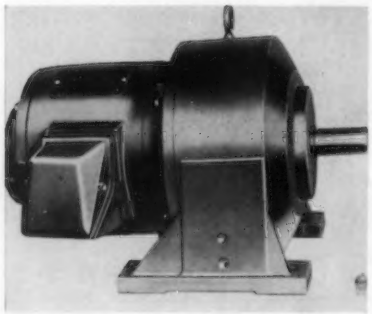
**ARMCO STEEL CORPORATION**

1606 CURTIS STREET, MIDDLETOWN, OHIO

ARMCO®

SHEFFIELD STEEL DIVISION • ARMCO DRAINAGE & METAL PRODUCTS, INC. • THE ARMCO INTERNATIONAL CORPORATION

# NEW EQUIPMENT AND SUPPLIES



## Gearmotor Line Added

The addition of a new line of gearmotors to its present list of products is announced by Reliance Electric & Engineering Co., 1088 Ivanhoe Rd., Cleveland 10, Ohio. The company now offers gearmotors in both a.c. and d.c., from one to 60 horsepower. The products combine the latest design developments of mechanical gearing with rugged construction for trouble free performance under adverse operating conditions.

Two-way seals lock lubricating oil in and at the same time prevent the entrance of dirt. This allows the units to be mounted in virtually any position, with no danger of oil leakage. Induction hardening of tooth surfaces on tough alloy steel gears provides extra strength characteristics. Simplicity of design avoids excessive mechanisms, lowers mechanical friction, and provides better power transmission. A variety of mountings, enclosures, and ratios allows units of near custom design for a variety of applications.

## Air Breaker for Metal-Clad Switchgear

A new circuit breaker, rated 4.16 k.v., 50,000 k.v.a., for use in indoor and outdoor metal-clad switchgear is now available from Westinghouse Electric Corp., Box 2278, Pittsburgh 30, Penn. The breaker is lighter and smaller than its predecessor, and can be modified at the factory to fit into the older housings for the superseded unit.

The product has main contacts of the self-aligning multiple-line butt type. Separation of these contacts transfers current to arcing contact whose erosion is minimized by inlays of silver tungsten. A lighter weight hinge-type arc chute with improved arc interrupting ability is used. By removing only one bolt the chute can be tilted back for easy inspection and maintenance of contacts. Withdrawing a hinged pin permits removal of the complete arc chute.

All parts are accessible for inspection through use of pole unit construction. The entire contact assembly for each single-pole unit is mounted in a U-shape fire and shock resistant molded base support. This allows an easy change of one complete pole of the breaker without disturbing the other two.

Faster interruption of low magnetizing currents is provided with a new puffer that speeds movement of the arc.

## Warehouse Truck Eliminates Need for Operator

An electronic industrial tractor, called Guide-O-Matic, that requires no operator is the new product of Barrett-Cravens Co., 628 Dundee Rd., Northbrook, Ill. Control of the unit is maintained with a guide wire which may be imbedded beneath the surface of a concrete floor, laid under a tape on the floor, or strung overhead. The guide wire emits an electronic signal which is sensed by the guidance receiver on the tractor, guiding it left or right and controlling stopping and starting.

No physical contact between wire and tractor is necessary. Signals are picked up by a receiver mounted in the tractor. The signals not only control the movement of the tractor, but also of any trailers being towed at the time.

The automatic unit can pull up to 6,000 lbs. of freight, and works in an undeviating path. In narrow aisle warehouse conditions, the danger of having trucks accidently striking and damaging goods due to a runaway is eliminated.

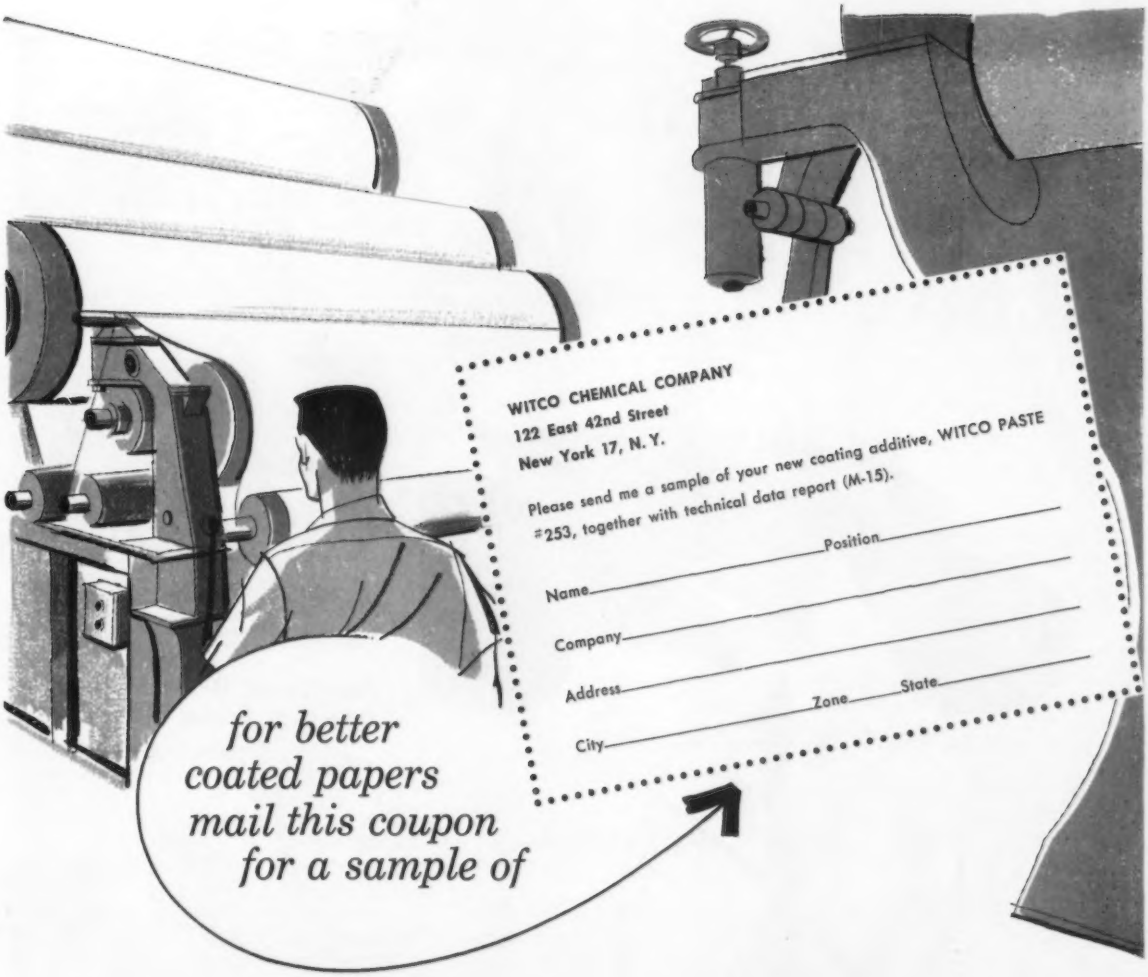
The unit has a top speed of more than 6 m.p.h. It is equipped with hand controls for conventional battery-powered tractor use if desired.

## Circular Knife Grinder Is Versatile Unit

A new model SG circular knife grinder is announced by Cameron Machine Co., 61 Poplar St., Brooklyn 1, N.Y. The grinder unit handles circular knives, either the shear-cut or the score-cut types, ranging in size from 2¼ in. diameter up to 9 in. in diameter.

A four speed spindle drive permits instant speed changes, adapting grinding speed to large mill type circular knives. Even faster speeds are possible for the 3 in. diameter slitter wheels and a top speed of 400 r.p.m. is provided for polishing.

Precision adjustment control of the pivot-mounted grinding head assures an exact cutting edge angle. The grinder has automatic oscillation of the grinding wheel and is designed so that both planes of the included angle on score-cut wheels can be ground without removing the wheel from the grinder unit. This feature assures adequate centralization of the cutting edge. The product is easy to operate and runs on 110 volt, 60 cycle single phase current.



WITCO CHEMICAL COMPANY
122 East 42nd Street
New York 17, N. Y.

Please send me a sample of your new coating additive, WITCO PASTE #253, together with technical data report (M-15).

Name _____ Position _____

Company _____

Address _____

City _____ Zone _____ State _____

*for better coated papers mail this coupon for a sample of*

## WITCO'S NEW COATING ADDITIVE

# WITCO PASTE #253

This smooth paste, containing ultra fine particle sized solids with carefully selected surface active agents, offers many advantages in the production of machine-coated papers:

- **Excellent lubrication and roll release**
- **Non-dusting in supercalendering**
- **Good flow (controlled low viscosity)**
- **Improved pick resistance**
- **Maximum gloss and brightness**
- **Effective plasticizing**
- **Excellent water repellency**
- **Good printing reproduction**
- **Will not darken or turn rancid in storage**

Prove these advantages for yourself! Mail the coupon for a free sample.

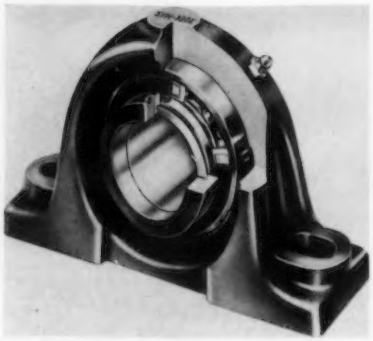
WITCO

*36 Years of Growth*

## WITCO CHEMICAL COMPANY

122 East 42nd Street, New York 17, N. Y.
Chicago · Boston · Akron · Atlanta · Houston · Los Angeles
San Francisco · London and Manchester, England

## Anti-Friction Bearing Mount Have Eccentric Locks



Newly designed pillow blocks and flanged mountings for anti-friction bearings are being added to the present line of bearing mounts of SKF Industries, Inc., Front St. and Erie Ave., Philadelphia 32, Pa. Called Types Syh-X and Fy-X, both products are of the eccentric lock type.

The bearing mounts incorporate positive sealing with a fairprene washer for adequate lubricant retention, an external rotating flinger to keep out dirt, a spherical outer ring to compensate for initial misalignment and a re-lubrication fitting. The block unit height is also reduced so as to allow greater use in limited space applications.

In place of a separate locking collar with set screws, eccentric locks are provided. All new units are available in the same load capacities as previous Sy and Fy models. Both flanged mounting units are suited for applications where pedestals are not available and where bearing housing must be mounted at right angles to the shaft.

Unremitting vigilance is the price of quality. Every day sees numerous samples of our purchased wire stock tested mechanically and metallurgically. These precautions, added to rigid inspection throughout our manufacturing procedure, safeguard the uniform quality of Lindsay Fourdrinier wire cloth. The Lindsay Wire Weaving Company, Cleveland 10, Ohio.

LINDSAY WIRES Since 1904

FOR PAPER MANUFACTURING

## Fractional Drive With Integral Brake Offered

Dynamic Division of Eaton Manufacturing Co., Cleveland 10, Ohio, announces it has developed and is now making available an adjustable speed, fractional horsepower drive, with integral electrically operated friction brake or integral speed reducer.

Two brake ratings of 18 and 36 lbs. torque are offered. Speed reducers are available from 5:1 to 100:1, depending upon drive horsepower rating.

The single package drive is a combination of a.c. constant speed induction motor, eddy-current coupling and electronic control. Connection to a standard power line is the only wiring required for operation. All drives have a continuous constant torque rating from 25:1 speed range. Speed stability of plus or minus 2 per cent of top speed at point within the operating range is ensured by electronic control.

## Fishy Odor Costs Firm $7,000

Compensation to a paper box firm for paper food boxes contaminated by fish meal odors has been fixed by Justice J. O. Wilson at $7,046 in Vancouver, B. C.

Judgment for this sum was entered in Supreme Court for Belkin Paper Ltd., in its suit against Wells Cartage Ltd., both of Vancouver.

Odors and vapors from fish meal stored in the same building seeped through to the paper goods, the Belkin company contended.

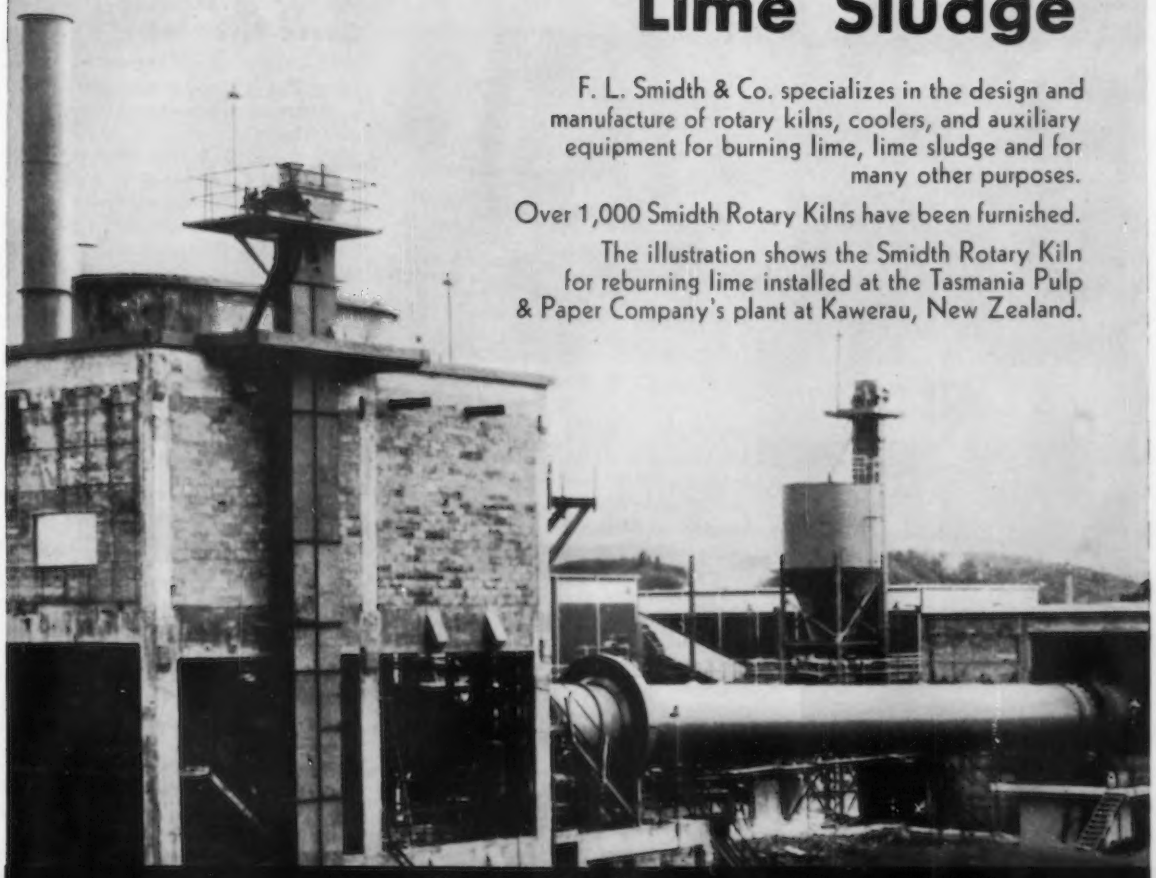
# SMIDTH
## *Rotary Kilns*

## For reburning Lime Sludge

F. L. Smidth & Co. specializes in the design and manufacture of rotary kilns, coolers, and auxiliary equipment for burning lime, lime sludge and for many other purposes.

Over 1,000 Smidth Rotary Kilns have been furnished.

The illustration shows the Smidth Rotary Kiln for reburning lime installed at the Tasmania Pulp & Paper Company's plant at Kawerau, New Zealand.



F. L. Smidth & Co.
*Engineers and Machinery Manufacturers*
11 West 42nd Street
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London, W. 1, England

F. L. Smidth & Cie France
80 Rue Taitbout
Paris (9e) France

F. L. Smidth & Co. of Canada, Ltd.
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F. L. Smidth & Co. (Bombay) Ltd.
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Bombay, India

# PAPER PEOPLE

J. L. Camp, Jr.

J. E. Ray, 3rd

J. M. Camp, Jr.

C. C. Gouldman

H. D. Camp

## Changes in Top Management at Camp

Camp Manufacturing Co., Inc. of Franklin, Va. has created two new positions in the top management and elected five new directors at the annual meeting of its stockholders.

J. L. Camp, Jr. was made chairman of the board, after serving as president for thirty years. W. M. Camp, heretofore vice president, was made vice chairman of the Board. Hugh D. Camp was promoted from executive vice president to president. These officers will serve as an Executive Committee. All three are sons of the late J. L. Camp, one of the founders of the company, which was incorporated in 1887 and has operated continuously since that date.

The positions of chairman and vice chairman were newly created, to provide a continuity of management and at the same time make room for moving junior personnel into positions corresponding to their expanding responsibilities.

The five new directors are J. M. Camp, Jr., J. E. Ray, 3rd, S. A. Lipscomb, Jr., Philip E. Frankfort and C. C. Gouldman, all of Franklin. Each has had important managerial positions with the company for several years past. J. M. Camp, Jr. and Mr. Ray are likewise descendants of the original founders, Mr. Camp being a grandson of the late P. D. Camp and Mr. Ray a grandson of the late J. L. Camp.

This younger group was also advanced in the list of officers elected by the directors. In addition to chairman, vice chairman and president, the officers are now: Walter C. Shorter, vice president in Charge of Sales; Mr. Frankfort, vice president; Mr. Gouldman, vice president; and Mr. Ray, vice president. J. M. Camp, Jr., formerly assistant treasurer was made treasurer. Mr. Parker was continued as general counsel and secretary, and Mr. Lipscomb as controller and assistant secretary.

The company lost one director by resignation. Walter S. Robertson, of Richmond, Assistant Secretary of State for Far Eastern Affairs, advised the stockholders that he could no longer serve, on account of his duties in the State Department. He had been on the Camp board since March 1941.

The Camp company provided for a $4 million expansion in its power plant, as one step in enlarging its production. The immediate plans call for additional equipment to be put into operation in the power plant department.

## Porter to Manage Coosa River Mill

The Coosa River Newsprint Co. of Coosa Pines, Ala., has appointed, Donald C. Porter as mill manager. He will take over May 15.

Mr. Porter, a 28-year employe of Kimberly-Clark Corp., comes to Alabama after eight years as manager of Kimberly-Clark's Canadian subsidiary, the Long-Lac Pulp and Paper Co. at Terrace Bay, Ontario. He formerly was employed in mill operations and in staff assignments in connection with the corporation's chief mill manager office.

Mr. Porter assumes managerial duties of Coosa River's mill on the eve of its first major expansion program since the mill started in January 1950. A new newsprint machine is being installed to double the production capacity.

## Powell River Staff Changes

George W. O'Brien, active in the coastal lumbering industry for 36 years, relinquished his position as senior vice-president of the Powell River Co., Vancouver, B. C., on May 1. He will remain a director of the company and president of Kingcom Navigation Co., a Powell River subsidiary.

Harold A. Renwick, vice-president of B. C. Manufacturing Co., a Powell River subsidiary, will also become vice-president of the parent company.

Harold P. J. Moorehead, the company's chief engineer, was named vice-president, engineering.

## LeBoutillier Heads Y.P.O.

Phillip LeBoutillier, Jr., president of the Ottawa Paper Co., Toledo, Ohio, has been elected area vice president of the Young Presidents Organization at the annual school for presidents in Hollywood, Fla.

# Look what COLOR can do

**Cure the common cold?** Well, we won't claim *that*. Appealing as colored tissues are, they aren't medicine. But color — the right colors — can help sell your paper products faster.

Our technical staff will be glad to help you find the right shades and the most economical formulations for the paper products you sell. You'll see how much faster they move off the shelves! Don't be left behind in the trend to colored paper products. Write E. I. du Pont de Nemours & Co. (Inc.), Dyes & Chemicals Div., Wilmington 98, Del.

DU PONT
REG. U. S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING
...THROUGH CHEMISTRY

Du Pont Dyes

***Color sells more . . . for your customers and you***

WALKER HAMILTON, who has been named a special consultant to the Forest Products Division of Olin Mathieson Chemical Corp. Mr. Hamilton, who recently retired as president of Riegel Paper Corp., will act as advisor to the division for a contemplated expansion of its kraft pulp and paper producing facilities.

## Several Production Men Advance at Camas

In recent personnel advances at the Camas (Wash) mill of Crown Zellerbach Corp. G. A. Lorenz, formerly paper mill superintendent, tissue end, was promoted to paper mill superintendent, wrapping end. He moved up through paper machine roles until 1935 when he was named paper machine room shift foreman. In 1947 became paper mill superintendent, tissue.

E. P. Barthelemy, formerly assistant paper mill superintendent, tissue, now becomes paper mill superintendent, tissue. In 1942 he was named paper machine room shift foreman. In 1953 he was promoted to the position held untii his most recent advancement.

Henry L. (Louie) Ostenson, former assistant to the paper mill superintendent (consumer products), now becomes assistant paper mill superintendent, tissue end. He joined Crown Zellerbach in Camas in 1935. In 1949 he became paper machine room shift foreman and in 1953 was named assistant to the paper mill superintendent at Ocean Falls. In August 1953 he came back to Camas to accept the position he has held until this newest promotion.

## Named V.-P. of Scott Subsidiaries

G. N. Carleton, vice president and director of Scott Paper Co., has been elected vice president and director of Driftwood Lands and Timber Ltd., and director of British Columbia Forest Products Ltd., in Canada; also a director of Compania Industrial de San Cristobal, S.A., Mexico, and of Bowater-Scott Corp. of London, England—all divisions of Scott Paper Co.

## Diamond Match Promotions

John C. Benny, general superintendent of the Diamond Match Co.'s Ogdensburg plant, has been promoted to resident manager of the company's plant at Palmer, Mass., and James L. Horton, technical superintendent of the Ogdensburg plant has been promoted to general superintendent.

## Guy Potter Retires From St. Croix Paper

Guy Potter, former master mechanic and since September 1953 the mechanical superintendent at St. Croix Paper Co., Woodland, Maine, will retire about July 1 of this year. He began to relinquish his responsibilities on May 1st.

Jefferson Farmer, became plant engineer around May 1st, and in that capacity is now directly responsible for all mechanical maintenance and engineering.

Mr. Farmer is a 1935 graduate in mechanical engineering from M. I. T. and for the past ten years has been employed by Hollingsworth & Whitney, Waterville, Maine, as plant engineer and assistant chief engineer.

## C. F. Raber Elected V.-P. At American Box Board

Recently elected as a vice-president of American Box Board Co. was C. F. Raber, who has served as director of the company since 1943 and as head of industrial relations since 1945.

## Joins Consolidated W.P.&P.

Robert L. Wallis has joined the Ahdawagam Division of Consolidated Water Power & Paper Co., Wisconsin Rapids, Wis. as plant engineer.

I. D. Wallach

Arthur Ross

## Wallach Named President of Gottesman & Co.

Gottesman and Co., Inc., international wood pulp merchants; and Central National Corp., investment bankers, of 100 Park Ave., New York City, have elected Ira D. Wallach as president of both companies to succeed D. Samuel Gottesman who died April 21.

Mr. Wallach, a director of both companies, has been an officer of both organizations since 1946 and their executive vice president since 1952.

Central National also announced that Arthur Ross, formerly vice president, had been elected to its board of directors and to the newly-created position of executive vice president and managing director.

It was further announced that the commercial operations will continue under the direction of Samuel Dauman, a director and first vice president of Gottesman and Co., Inc., and vice president of Central National.

Benjamin I. Sheldon, a director and vice president of both companies, will continue to be in charge of Central National's paper export operations.

Mr. Wallach served as executive vice president and chief executive officer of Eastern Corp., Bangor, Maine, and as president of Eastern's subsidiary, Royal Lace Paper Works of Brooklyn, N. Y., in 1951-52. He is vice president and a director of the D. S. and R. H. Gottesman Foundation; a director and member of the executive committee of Eastern Corp., and a director of Rayonier, Inc.

Mr. Ross is a director of Rayonier, Inc., New York City and a director and member of the executive committee of St. Lawrence Corp., Ltd., Montreal.

Harold W. Rowe

## Manages Detroit Sales For Hinde & Dauch

Appointment of Harold W. Rowe as Detroit district sales manager for The Hinde & Dauch Paper Co. has been announced.

In his new position, Mr. Rowe will be responsible for the sale of products made at the company's Detroit factory.

Mr. Rowe, who was assistant district sales manager prior to his appointment, succeeds George T. Henderson, who moves to the company's headquarters in Sandusky as assistant to the president.

Mr. Rowe has been associated with Hinde & Dauch since 1941.

## New Directors for Specialty Paper

Two new directors have been elected by Specialty Paper Co., Dayton, Ohio, makers of flexible packaging materials.

The new directors are H. Talbott Mead, vice president of the Mead Corp., and Anthony Haswell, president of Dayton Malleable Iron Co.

## A. E. Brigham Honored

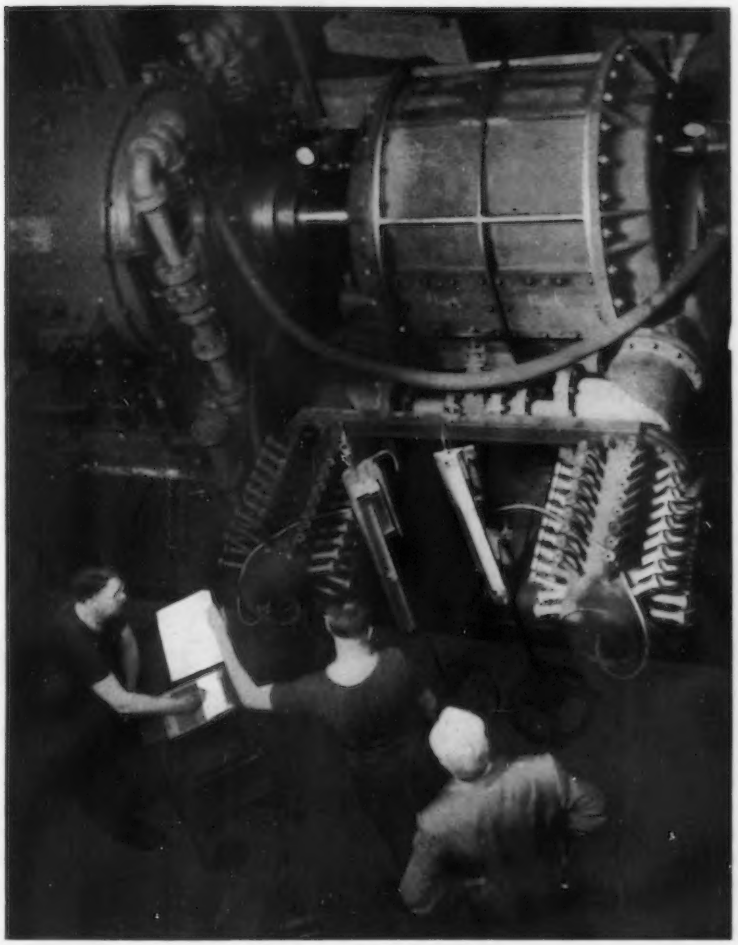
Arthur E. Brigham, superintendent of the Logan Division of U. S. Envelope Co. in Worcester, Mass. has retired after 45 years with the company. Among those attending a dinner for him on the evening of May 1 were Joseph S. Fairchild, senior vice-president, and Magnus S. Peterson, treasurer of U. S. Envelope.

## Veteran Foreman Retires

Ray Abbott cutting department foreman at the Carton & Container Division of General Foods Corp., Battle Creek, Mich., retired May 1 after 49 years and five months with the company.

Mr. Abbott was honored at a retirement party by his co-workers. He started as an errand boy in 1906 for C. W. Post's Battle Creek Paper Box Co. and was made foreman in 1923.


# Rated performance of every Nash Vacuum Pump is assured by this precise laboratory test



Rated capacities of Nash Vacuum Pumps are not theoretical. Every Nash Pump is tested individually. Air capacity is determined by delivery thru accurately machined and calibrated orifices. Related vacuum is measured by precise mercury column, and horse power is recorded electro-dynamically. Records of these tests are retained by us, and certified copies are available to Nash Pump owners.

That is one of the reasons why Nash Vacuum Pumps are installed in over a thousand leading Paper Mills. An engineer from Nash will be glad to survey your mill, and make recommendations, entirely without obligation to you.

**NASH ENGINEERING COMPANY**

**440 WILSON ROAD, SO. NORWALK, CONN.**

## Weber Succeeds Fletcher At Hammermill

Edward F. Fletcher has retired as purchasing agent of the Hammermill Paper Co., Erie, Pa. He has been succeeded by Herman C. Weber, formerly assistant purchasing agent. Mr. Weber has, in turn, been succeeded by Roger G. Sturtevant.

Mr. Fletcher joined the Hammermill organization in 1907 and was the mill's third oldest-in-service employee. He had been the Hammermill purchasing agent since 1916, at which time the purchasing department was formed. During those years, he was responsible for the expenditure of approximately one-half billion dollars of Hammermill money.

Mr. Weber joined the Hammermill organization in 1943, as a staff accountant and internal auditor. He was made head of Hammermill's tax and audit section in 1948, and appointed assistant purchasing agent in 1952. He is a graduate of Pennsylvania State University.

In addition to succeeding Mr. Fletcher as Hammermill purchasing agent, Mr. Weber also succeeds his former associate as a member of the Materials Committee of American Paper and Pulp Assn.

## Changes at Powell River

George W. O'Brien retired May 1 as senior vice-president of the Powell River Co. Mr. O'Brien has been active in the coastal lumber industry for the past 36 years. He will continue as a director of the company and as president of the Kingcom Navigation Co., a Powell River subsidiary which is engaged in the towing and transportation of logs on the B. C. coast.

Harold A. Renwick, vice-president of B. C. Manufacturing Co., another subsidiary, has been appointed vice-president of the parent company.

Harold P. J. Moorehead, chief engineer for the company, has now also been named vice-president, engineering.

George V. Bayly

## Named Gen. Mgr. of Ohio Boxboard Co.

George V. Bayly has been promoted to general manager of the Carton Division of The Ohio Boxboard Co. In his new position, Mr. Bayly is in charge of all carton sales and the company's branch carton plant operations.

He joined the company's Industrial Engineering Department in 1946 and was named a staff assistant in the Rittman Production Division in 1947. He moved to the field sales staff in 1948 and represented Ohio Boxboard in the Cincinnati area until 1952 when he was named sales manager of the Carton Division.

## Wiles Retires from Weston

H. N. Wiles, treasurer of Weston Paper and Manufacturing Co., Dayton, Ohio, for 33 years, has retired from that post, but will remain with the company as a consultant. E. W. Weston, secretary, will assume duties of treasurer, while K. L. Valentine will become controller, in addition to his posts of assistant secretary and treasurer.


YOUR GUARANTEED CASH MARKET FOR SURPLUS MACHINERY

WITH IMMEDIATE REMOVAL FROM YOUR MILL

ROSS PAPER MACHINERY COMPANY

265 Passaic Street, Newark 4, New Jersey


## Wins Mead Merit Scholarship

Kenneth F. Reinschmidt, a June graduate of Woodward High School, Cincinnati, Ohio, is being awarded the first Mead Corp. Scholarship of the National Merit Scholarship program. Mr. Reinschmidt expects to enter Massachusetts Institute of Technology in September and will major in Civil Engineering.

The Mead Merit Scholarship expressed the preference for a boy, resident of Ohio, selected from an Ohio high school, who intended to major in chemical, civil, electrical or mechanical engineering.

## Heads Whale Safety

Jeanette B. Whale has been elected president of the Whale Safety Paper Co., Waupaca, Wis., to succeed her late husband, R. Gerald Whale, who died April 10 in New York. Mrs. Whale said there would be no change in the firm's policy or long range expansion plans.

## R. Abbott Retires From General Food Carton Div.

After 49 years with the Carton & Container Division, General Foods Corp. in Battle Creek, Mich., Ray Abbott is retiring. Working up as a pressman, he reached the position of Cutting Dept. foreman. His duties will be taken over by Robert Confer.

## Joins Atlantic Paper

Edward A. Chastney, Jr. will join Atlantic Paper Co., Public Ledger Building, Philadelphia 6, Pa. on June 1, 1956, as vice-president and treasurer.

## Heads National Industrial Advs.

George Bowen, advertising manager of the Robert Gair Co., has been elected president of the New York chapter of the National Industrial Advertisers Assn.

## Crane Enlarges Office

Crane & Co. has announced plans for alteration of its present office quarters in Dalton which will involve the expenditure of around $200,000. The project is underway at present with George E. Emerson, Inc., of Pittsfield doing the construction work. Prentice Bradley also of Pittsfield, served as architect. About 10,000 sq. ft. will be added to the rear of the existing office.

# OBITUARIES

**Frank Lewis Blake,** 68, of Evanston, Ill., retired advertising manager of the Kimberley-Clark Corp., Neenah, Wis., died May 3. He suffered a heart attack while riding a bus.

**Joseph P. Cunningham,** 66, Evanston, Ill., died April 29. He was vice president of Bradner Smith & Co., 333 S. Desplaines st., wholesale paper firm.

**Charles R. Decker, Sr.,** 79, died April 27 in Milwaukee, Wis., Mr. Decker was associated with the old Milwaukee Bag Co. from 1902 to 1921. He took over the firm in 1921. In 1924 the firm was acquired by the Crase Bag Co. and Mr. Decker stayed on as executive vice-president. He retired in 1938.

**George B. Estey,** 78, a former mill superintendent for the Fox River Paper Co., died at Appleton, Wis., May 1.

**Harry E. Meier,** 55, secretary-treasurer of the Muskegon (Mich.) Paper Box Co., who suffered rib fractures in a car accident April 25, died of a blood clot in the lungs at Mercy Hospital April 29.

Mr. Meier joined Muskegon Paper Box Co. shortly after graduating from high school and served in a number of executive capacities. He had been secretary-treasurer of the firm for several years.

**Albert Robillard,** 54, a papermaker with the E. B. Eddy Co. for 41 years, died May 29 in Ottawa, Ont., following a short illness. Mr. Robillard was a member of Local 235, International Brotherhood of Papermakers.

**Frank Sawatzki,** 66, died May 3rd at Columbia Hospital, Milwaukee, Wis., after suffering a heart attack at his home.

He retired in 1954 after 41 years of service with the Cornell Paper Products Co.

Mr. Sawatzki was a member of the company's Quarter-Century Club.

**Joseph J. Schafer,** 55, supervisor of converting at Marathon Corp's. Northern Paper Mills, Green Bay, Wis., died April 26.

**William H. Scott,** 81, retired superintendent of the American Tissue Mills, Holyoke, Mass., died at Delray Beach, Fla. on April 25.

**Daniel A. (Bert) Heffner,** 80, of Cleveland, Ohio died April 20 at Mt. Carmel Hospital after several days' illness.

He was the retired president and one of the founders of the Central Tablet Manufacturing Co. He retired in 1953.

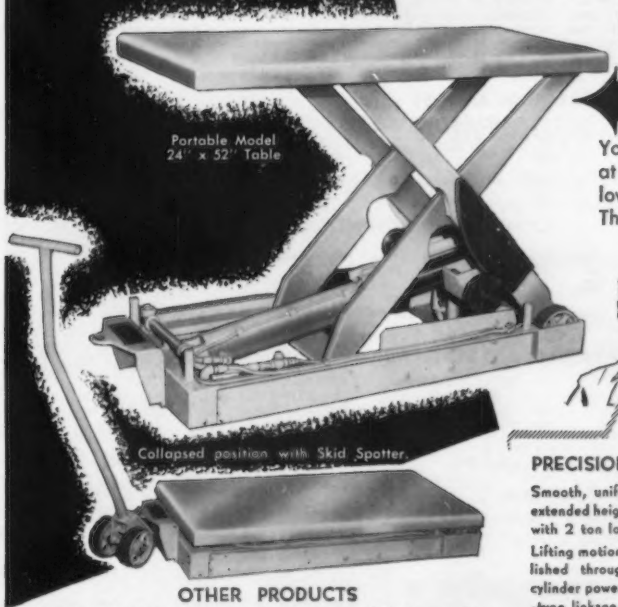
**Howard S. Jones,** 56, founder of the Cemmercial Envelope Corp., Baltimore, Md., in 1920 and the Washington Envelope Corp., Washington, D. C., in 1926, died of a heart attack on April 17 in Baltimore. Mr. Jones was president of both the above mentioned paper concerns and treasurer of the Baltimore Orioles baseball team.

---

• OLIN MATHIESON CHEMICAL CORP. has undertaken a $7,500,000 expansion program to double electrolytic production of chlorine and caustic soda at its McIntosh, Ala. plant. The expansion will increase the plant's capacity to 250 tons of chlorine and 280 tons of caustic soda per day.

The company is also building barge docking and loading facilities on the Tombigbee River adjacent to the McIntosh plant. These will be in operation by late summer of this year and will permit shipments by water from the plant to river destinations, the Gulf of Mexico and beyond.


Southworth Portable LIFT TABLE
Increases Production




COMPACT | LOW IN COST

You, too, can increase production by keeping materials at correct working heights. And, you can do it at a low, low cost with a New Southworth Portable Lift Table. This versatile, compact Lift with its exceptional efficiency and big two ton capacity occupies a minimum of space. Fits between the legs of a standard skid (collapsed height only 7¼") and can be moved from machine to machine. Operates with electrical hand or foot controls. Available with 24" x 52", 36" x 52" or 48" x 52" platform. Also, it can be installed permanently.
Don't wait, write for details today.

PRECISION BUILT

Smooth, uniform rise to extended height of 37½" with 2 ton load.

Lifting motion is accomplished through hydraulic cylinder powered, scissors-type linkage.

Fixed wheels, pull plate, detachable Skid Spotter.

OTHER PRODUCTS

Hand, Foot, Motor Driven Punching Machines, Skid Turners, Paper Conditioners, Automatic Skid Lifts, Humidifiers, Envelope Presses, Punch Heads, Tabbing Knives, Corner Cutters. Also designers and builders of custom equipment to meet your needs.

SOUTHWORTH MACHINE CO. PORTLAND, MAINE

Southworth Machine Co.
34 Warren Ave., Portland, Me.
Please rush details on Portable Lift Table
Name .....
Company .....
Address .....
City ..... State .....

• FISCHER & PORTER, Hatboro, Pa., announces three promotions in its Sales Department. Philip E. Sellers, formerly sales manager, becomes sales vice president; Herman Kockritz, formerly Southeastern Divisional manager becomes field sales manager; and William Trethaway, formerly sales engineer, becomes district manager of the Atlanta office.

# NEWS OF SUPPLIERS

• AMERICAN CYANAMID CO. and The New Jersey Zinc Co. jointly announced that an agreement of sale entered into between them in March 1954, was carried out today with the turning over to the Zinc company of Cyanamid's Gloucester City, N.J., titanium dioxide pigments plants, following completion of Cyanamid's new titanium dioxide pigments plant at Savannah, Ga.

• ALLIS-CHALMERS MFG. CO. has assigned Randolph W. Englund and Jack W. McGill to the electrical application and motor and generator departments, respectively, of Allis-Chalmers' power equipment division, Milwaukee, Wis.

Robert P. Reider has been named to the Peoria, Ill. district office of Allis-Chalmers' industries group as a sales representative.


**CHAS. T. MAIN, INC.**
CONSULTING ENGINEERS
Process Studies, Design, Specifications and Engineering Supervision
**PULP AND PAPER MILLS**
Steam, Hydraulic and Electrical Engineering
Reports, Consultation and Valuations
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PITTSBURGH 19, PA. • BIRMINGHAM 3, ALA.
Offices in Principal U.S. and Canadian Cities
Engineers Constructors
Complete Service for PULP and PAPER MILLS including all auxiliaries and byproducts.
Surveys • Reports • Design
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in
BALTIMORE
CHICAGO
DETROIT
JERSEY CITY
KALAMAZOO
LOS ANGELES
PHILADELPHIA
always in the market
pioneer paper stock
company graders and packers of waste paper


## Figures of the Week

**PAPER PRODUCTION RATIO REPORT** —American Paper & Pulp Ass'n. Figures

(Production as percent of normal capacity)

**COMPARATIVE WEEKLY SUMMARIES**

| | | | | | |
|---|---|---|---|---|---|
| | Mar. 31 | Apr. 7 | Apr. 14 | Apr. 21 | Apr. 28 |
| 1956 | 101.5 | 98.8 | 103.7 | 103.7r | 103.0 |
| | Apr. 2 | Apr. 9 | Apr. 16 | Apr. 23 | Apr. 30 |
| 1955 | 98.1 | 97.2 | 97.1 | 98.1 | 99.5 |

r Revised.

**COMPARATIVE MONTHLY SUMMARIES**

| Year | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year Avg. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1955 | 93.6 | 96.6 | 97.9 | 98.0 | 99.3 | 97.4 | 85.5 | 96.2 | 93.8 | 101.2 | 100.6 | 94.0 | 94.9 |
| 1956 | 98.9‡ | 101.5‡ | 102.6‡ | | | | | | | | | | |

‡ Preliminary.

**COMPARATIVE YEARLY SUMMARIES**

| | 1949 | 1950 | 1951 | 1952 | 1953 | 1954 | 1955 | 1956 |
|---|---|---|---|---|---|---|---|---|
| Year to Date | 85.6 | 95.3 | 101.6 | 95.5 | 94.4 | 93.8 | 95.5 | 101.4 |
| Year Average | 83.7 | 95.8 | 98.0 | 88.6 | 92.3 | 91.6 | 94.9 | |

*All of the above data is based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.*

*Note: In the above tables all the ratios shown are on the basis of a normal 6 and 7 day capacity.*

**PAPERBOARD OPERATING RATIOS†**

**COMPARATIVE WEEKLY SUMMARIES**

| | | | | | |
|---|---|---|---|---|---|
| | Mar. 31 | Apr. 7 | Apr. 14 | Apr. 21 | Apr. 28 |
| 1956 | 101 | 94 | 100 | 99 | 99 |
| | Apr. 2 | Apr. 9 | Apr. 16 | Apr. 23 | Apr. 30 |
| 1955 | 95 | 95 | 92 | 95 | 96 |

**COMPARATIVE MONTHLY SUMMARIES**

| Year | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year Avg. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1955 | 92 | 95 | 96 | 94 | 97 | 97 | 84 | 99 | 97 | 102 | 101 | 92 | 96 |
| 1956 | 100 | 100 | 99 | | | | | | | | | | |

† *Percents of operation based on "Inch-Hours" reported on a 6-day basis to the National Paperboard Association.*

**SUMMARY OF PAPERBOARD STATISTICS**—National Paperboard Ass'n. Figures

| ITEM | THIS WEEK ENDING Apr. 28, 1956 | LAST WEEK ENDING Apr. 21, 1956 | CUMULATIVE TO DATE Jan. 1, 1956 to Apr. 28, 1956 |
|---|---|---|---|
| % Activity | 99% | 99% | 100% |
| | *Tons* | *Tons* | *Tons* |
| Total Production | 293,282 | 281,098 | 4,808,505 |
| Liner | 93,274 | 94,158 | 1,619,092 |
| Corrugating Material | 46,825 | 44,601 | 759,347 |
| Chip & Filler Board | 6,693 | 5,783 | 103,729 |
| Total Containerboard | 146,792 | 144,542 | 2,482,168 |
| Folding | 54,075 | 54,348 | 875,732 |
| Set-Up | 12,900 | 12,603 | 220,034 |
| Special Food Board | 27,009 | 23,943 | 391,742 |
| Other | 52,506 | 45,662 | 838,829 |
| Total Boxboard | 146,490 | 136,556 | 2,326,337 |
| **Total Orders** | *Tons* | *Tons* | |
| Received | 276,341 | 241,807 | |
| Unfilled End of Week | 535,018 | 557,227 | |

J. G. Frischkorn

H. C. Riley

• CLEVELAND TRAMRAIL DIV. The Cleveland Crane & Engineering Co., Wickliffe, Ohio, has appointed John G. Frischkorn district sales manager. His territory includes parts of West Virginia, Pennsylvania, New York and Eastern Canada.

Mr. Frischkorn has had sixteen years' experience with Cleveland Tramrail as design engineer for overhead materials handling equipment. He also was with the Euclid Crane & Hoist Co. for six years where he was chief engineer and later general sales manager.

• ERIE STRAYER has named Hugh C. Riley district representative for Erie clamshell buckets. His territory will include western New York, western Pennsylvania, West Virginia, Kentucky, Ohio, Michigan, Indiana, northern Illinois, and Wisconsin.

Mr. Riley will devote his time exclusively to working with distributors, original equipment manufacturers, and dealers in his territory. Prior to joining Erie Strayer, Mr. Riley spent eight years selling construction machinery, power cranes and shovels.

A. W. Roth

• AEROVENT FAN CO., INC. has appointed Al. W. Roth manager of the new Large Propellor Division. Mr. Roth, who has been prominent in Aerovent's large propeller development program since 1939, has served in a sales engineering capacity for the company throughout the Southwest and will continue to maintain offices in the Wright Building at Tulsa, Okla. and at Piqua, Ohio, site of the main office and factory of the parent organization.

• WORTHINGTON CORP. has appointed John J. Thompson, manager of Personnel and Training, manager of its newly created Salaried Personnel Department. At the same time Robert C. Hughes was named Director of Training, reporting to Mr. Thompson.

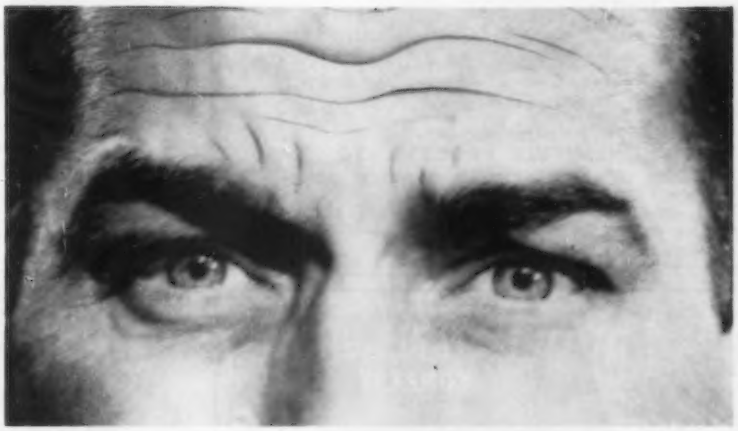
Mr. Thompson will assume all functions of the corporation's present Personnel and Training Department and will have full responsibility for the development and coordination of a Management Development Program which will include all training activities throughout the corporation. Mr. Hughes will be responsible for all training activities and college relations, including the company's recruiting programs.

• CHICAGO BRIDGE & IRON CO. has transferred N. Carey Iler, Jr. to the Cleveland Sales Office. Oliver E. Norris has been assigned to the company's New York Sales office.

Mr. Iler joined the Pacific Coast Erection Division of the company in 1953. Mr. Norris joined the Chicago Engineering department in 1952.

• DIAMOND ALKALI CO. has appointed C. J. Ott as administrative assistant in the Soda Products Division of the company, Cleveland, Ohio. Mr. Ott, who joined the controller's department in 1951, now takes over new, broader responsibilities in the division's administrative section.


**BURDENED** *with Dryer Felt problems?*



**Brandon Sales can help you quickly**

Avoid the worry and expense of needless downtime! Brandon's experienced staff gives you quick service, no matter when you need it.

Whether you need new felts . . . or services such as prestretching, and clipper seams . . . call your Brandon Sales representative. Brandon Makes All Three—Asbestos, Semi-Asbestos, Cotton.

*For immediate attention to your dryer felt problems, write:*

Brandon Sales, Inc.
Drawer L, Branwood Station
Greenville, South Carolina

Representatives:
Northern and New England States
Orton Corporation, Fitchburg, Mass.
Midwestern States
Frank Clawson, Kalamazoo, Mich.
West Coast
M. J. Maguire, Portland, Oregon
Southern States
R. S. (Bob) Davis, Greenville, S.C.

**BRANDON** DRYER FELTS

## WILLIAMS PRECISION FREENESS TESTER

**A Freeness Tester Based on Timed Drainage**

The only type of instrument that will give accurate freeness tests thruout the entire range from the freest to the slowest.

**No Other Instrument Has Its Versatility**

1. Test Pad instantly removable for dry weight check and consistency.
2. Makes hand sheets for color, sizing and dirt comparisons — shives.
3. The only Freeness Tester that can be equipped with Recording Attachment for research work or permanent records.
4. Behavior of stock may be observed thru graduated glass cylinder during test and measured at any intermediate point.

**Not New.....Proved By Experience**

**Most Versatile For Research — Most Practical For Control**

## WILLIAMS APPARATUS CO., Inc.

**19 Park Place** **Watertown, N. Y.**

Pulp Testing Ovens
Sheet Moulds
Sheet Dryers
Paper Moisture Testers
A.S.T.M. Penetration Testers
Smoothness Testers
Laboratory Presses
Electric Centrifuges
Wood Chip Classifiers

## CHEMIPULP PROCESS INC.

500 WOOLWORTH BUILDING WATERTOWN, NEW YORK

**CHEMICAL PULPING PROCESS**

Hot Acid Cooking and Recovery Systems
Chemipulp—K-C Digester Circulating Systems
Chemipulp—K-C Improved Acid Plants
Digester Waste Liquor $SO_2$ Gas and Heat Recovery
Chip Pretreatment Preparatory to Cooking

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*West Coast*
A. H. Lundberg
Orpheum Bldg., Seattle

Lundberg-Ahlen Equipment Ltd.
146 E. Broadway, Vancouver

## PLANT SITES IN PROVEN GROUND

Industry has made extraordinary growth in the South in recent years. To a large extent these developments have centered in the six southeastern states served by the Seaboard Air Line Railroad. On the basis of the actual experience of others, this area is proven ground for profitable operations.

Along the Seaboard Air Line Railroad there are still myriad opportunities for the establishment of industrial enterprises where labor, transportation, power, living conditions and other factors are highly favorable. Let us furnish you — without cost or obligation — information on some of those sites. An expression of your requirements will bring immediate response and we will gladly furnish detailed data on locations suited to your individual needs.

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Assistant Vice President
Seaboard Air Line Railroad Company
Norfolk 10,
Virginia

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AIR LINE RAILROAD
THROUGH THE HEART OF THE SOUTH

## WILLIAMS-GRAY COMPANY

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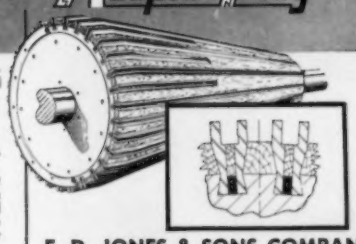
WILLIAMS-GRAY COMPANY 50TH ANNIVERSARY 1906-1956

Paul Foster
Peter Talbot
Ross Lawrence
Herb Fishburn
Wes Gallup
Bill French

Lindsay & Niagara Wires, Knox Woolen Felts Cotton & Asbestos Dryer Felts, Carrier Rope Splicing Tissues, Deckle Webbing, Apron Cloth, Wire Brushes.

## E.D. Jones Adapta-Plug



- Strongest plug design yet developed
- Completely bandless
- Easiest plug to strip and fill
- Bars held rigid — cannot move
- No hazard of slot wear or corrosion
- Available in solid plug or sleeve form for old or worn plugs

*Ask your Jones representative or write us direct.*

**E. D. JONES & SONS COMPANY**
**Pittsfield, Massachusetts**
***In Canada:* The Alexander Fleck Ltd., Ottawa**

***Builders of Quality Stock Preparation Machinery***

**Supplying Your Requirements**

## YOUR PAPER WASTE BECOMES PROFIT WHEN IT IS RECLAIMED. DO YOU SUPPORT THE MILLS WHICH MAKE THIS DISPOSAL POSSIBLE?

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# PRICE & PIERCE
## LTD.

WOODPULP

PAPER

**LONDON**
27 CLEMENTS LANE

**NEW YORK**
60 EAST 42nd ST.

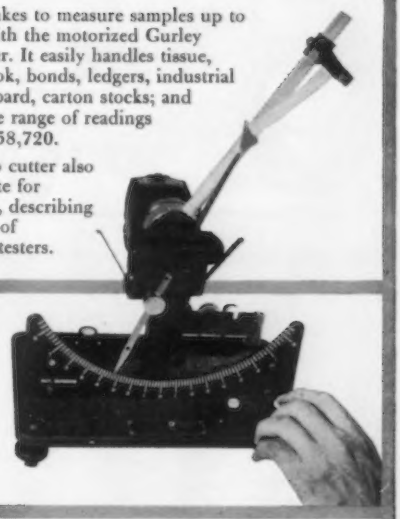
**MONTREAL**
SUN LIFE BLDG.



# 21 SECONDS *to Test Stiffness of Paper and Paper Board*

That's all it takes to measure samples up to 0.25" thick with the motorized Gurley Stiffness Tester. It easily handles tissue, newsprint, book, bonds, ledgers, industrial papers, cardboard, carton stocks; and permits a wide range of readings from 1 to 3,358,720.

Precision strip cutter also available. Write for Bulletin 1400, describing complete line of Gurley paper testers.



W. & L. E. Gurley, *520 Fulton Street, Troy, N.Y.*



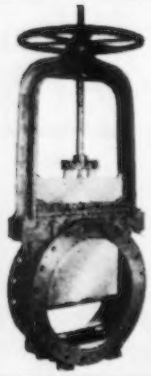
# ROGERS SERIES 220 HEAVY DUTY KNIFE GRINDERS

**SIZES**
**78" TO 220" CAPACITY**
**HYDRAULIC & ELECTRO-MECHANICAL DRIVES**
**MOTORS: 10 H.P. to 30 H.P.**
**WHEELS: 16" DIA. to 30" DIA.**
*for grinding*
**CHIPPER KNIVES**
**DOCTOR BLADES**
**VENEER KNIVES**
**SHEAR BLADES**
**PAPER KNIVES**
**WRITE FOR FULL INFORMATION**

Designed by experts and manufactured by skilled craftsmen, Rogers Grinders offer new standards of performance for years of satisfactory, trouble-free service. Engineered to meet the most exacting knife and cutter grinding requirements, we offer our equipment with full confidence it will meet with our customers' approval. Thoroughly modern in every respect, Rogers Grinders are manufactured to established standards from quality materials. Get the best, Get Rogers.

***Manufacturers of Knife & Face Grinding Equipment***
**SINCE 1887**

# SAMUEL C. ROGERS & CO., INC.
2070 SHERIDAN DRIVE
BUFFALO 23, NEW YORK



## RECORD PAPER & PULP STOCK VALVES "BONNETLESS" SELF CLEARING---"RESIDUE POCKETLESS TYPE"

**METALS — I.B.B.M. all iron, bronze or stainless steels, body parts plain or rubber lined.**

*The photo of 24" Fig. 241 I. B. B. M. valve while illustrating the gate bottom wedge system for forced gate seating and "GUILLOTINE" edge for shearing fibre at seat also shows the packing box and yoke as separate units. Both adjustable.*

- The "FAST THREADED" screw stem and ball bearing speeds valve operation.
- The packing box is extra deep, is adjustable and provided with specialized lubricated packings and special type gland and compression bolts.
- The yoke mountings are such that yokes for various methods of gate operation are interchangeable.
- Replaceable gate edge shoes are used in valves 10" and larger. These shoes are of special value when valves are installed stem and pipe horizontal.

*"RECORD PRODUCTS EXTENSIVELY USED IN DEFENSE PROJECTS"*

**RECORD FOUNDRY & MACHINE COMPANY**

LIVERMORE FALLS, MAINE, U. S. A.

## ELIXMAN
## CORES CAPS

Straight wound paper cores made in sizes from 2" to 10" inside diameter with any thickness wall required.

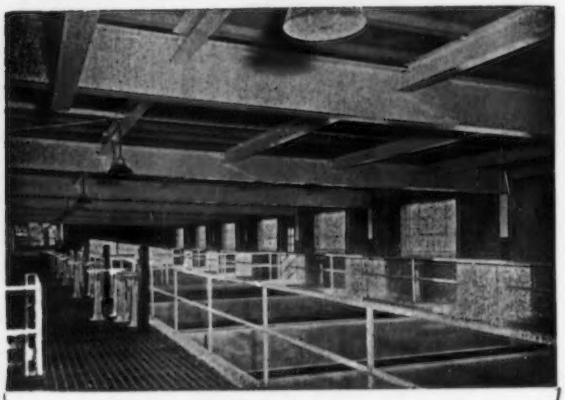
Long draw protected slot caps of heavy gauge steel in all standard sizes.

Heavy duty caps with reenforced square hole. This patented feature of reenforcement gives added strength and durability.

**Samples of caps or cores will be gladly submitted**

**ELIXMAN PAPER CORE COMPANY, INC.**

CORINTH, N. Y.



Concrete Gravity Air-Water-Wash type water Filtration Plant producing, at low cost, water with turbidity 0, color under 5 and iron 0.05 p.p.m. Fe.

**OTHER PRODUCTS**

**Demineralizing Plants**
**Water Softening Plants**
**Pressure Filter Plants**

and

All other types of water treating systems, including strainer valves, air wash systems, filter sand and anthracite beds and all filter repair and replacement parts. Over 50 years experience building new and modernizing old water treatment plants.

*Write for FREE Bulletins*

**HUNGERFORD & TERRY, INC.**

CLAYTON 4, NEW JERSEY

## "EXCELSIOR" FELTS

**The Trademark of Felts of Superior Quality for Every Grade of Pulp and Paper**

**KNOX WOOLEN COMPANY**

CAMDEN, MAINE

## Westvaco Quality Papers

Westvaco manufactures a wide range of high quality paper products — from fine printing to rugged converting papers. All of these papers are made from virgin chemical pulps to precise standards of uniformity and quality — Westvaco's guarantee of top performance.

*Printing Papers* . . . Coated and uncoated letterpress, coated and uncoated offset, and gravure.

*Writings* . . . Bond, mimeo, duplicating, ledger.

*Bristols* . . . Index, post card.

*Converting Papers* . . . Label, tablet, envelope, lining, file folder, tag, tabulating card, coating raw stock.

*Bleached Boards* . . . Cup, milk bottle, folding boxboard, frozen food container.

*Kraft Papers* . . . Bag, multiwall sack, envelope, asphalting, impregnating, waxing.

*Containerboard* . . . Linerboard and corrugating medium.

*Market Pulp* . . . Bleached and unbleached sulphate.

**West Virginia Pulp and Paper Company**
**230 Park Avenue, New York 17, N. Y.**
*35 East Wacker Dr., Chicago 1, Ill. • 503 Market St., San Francisco 5, Cal.*

## POTDEVIN
## Oil-Ink PRINTING PRESSES

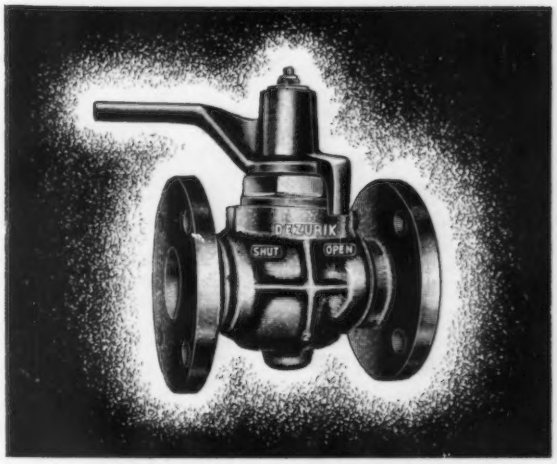
Illustrated is 4 color multi-size, oil ink printing press for all types of coffee, flour and sugar bag papers and printed wrappings. Automatic tension control rewind insures tight, evenly wound rolls.

Largest manufacturers of printing presses for paper conversion. Send for literature.

ESTABLISHED IN 1892 POTDEVIN

**POTDEVIN MACHINE CO.**
223 North Street Teterboro, N. J.

*Designers and manufacturers of equipment for Bag Making, Printing, Coating, Laminating, Gluing and Labeling*




## DeZURIK EASY-OPERATING NON-LUBRICATED PLUG VALVES

PROVED PERFORMERS IN SO MANY MILL APPLICATIONS

Basis Weight Control
Stock Chest Level Control
White Water Chest Level Control
Automatic Knock-down Shower Valve
Liquid Alum Distribution System
Liquid Size Distribution System
Clay and Stock Slurries
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Manual and Remote Pulper Dump Valves
3-Way and 4-Way for Multiple Jordan Hook-up
Beater or Slush-maker Makeup Water
Compressed Air
and many, many others.

**WRITE FOR DETAILS**
and recommendations.

**DeZURIK SHOWER CO.**
**SARTELL, MINNESOTA**

# PAPER TRADE JOURNAL / CLEARING HOUSE

## Help Wanted

### CONFIDENTIAL EMPLOYMENT SERVICE

We will welcome an opportunity to be of service, if you are available for a position in paper or pulp manufacturing or paper converting. SEND US YOUR RESUME. Many attractive positions at excellent salaries are open for top-notch men. No fee to be paid unless you accept employment through us. Negotiations are confidential.

CHARLES P. RAYMOND SERVICE, Inc.
Liberty 2-6547
294 Washington St. Boston 8, Mass.
M-14

### WANTED

**MEN WITH EXPERIENCE ON FLAK TYPE PULP DRYERS**

**We offer:**

1) An opportunity to join one of the leading and most progressive paper manufacturers in the country.
2) A position with unlimited potential—definite security.
3) Excellent living and working conditions—our new mill is located in central Florida, midway between Jacksonville and Daytona Beach.
4) A retirement plan to which all funds are contributed by the company.
5) Many benefits — i.e. — Group Life Insurance, Hospitalization and Surgical Insurance etc.

**Send resume to Hudson Pulp & Paper Corp., Southern Division, Palatka, Florida, Att: Personnel Dept.**

M-14

### SALES ENGINEER

With technical education and mill experience for field development work coordinating sales and research, Glassine manufacturer specializing in the protective packaging and industrial use fields offers opportunity for individual initiative and aggressiveness plus advancement. Salary commensurate with background, experience and ability. Complete insurance and profit sharing program. Write full information in strict confidence to Box 56-162 care Paper Trade Journal. M-14

### PAPER MILL SUPERINTENDENT

Outstanding opportunity in new modern paper plant with progressive and rapidly expanding company. Must have well rounded experience in the technical and practical aspects of high speed cylinder paperboard operations. Supervisory ability essential. Age 35 - 50. Excellent benefit programs including stock purchase plan, retirement, insurance, hospitalization, etc. Please submit detailed resume of experience, education, salary requirement, and personal data to Box 56-161. Replies will be held in strict confidence.

M-14

### EXCELLENT OPPORTUNITY FOR:

Superintendent in two machine Yankee Fourdrinier mill producing light weight Specialties. Write, giving age, complete experience, background and salary expected. Box 56-147 care Paper Trade Journal

M-14

WANTED—Manager for asphalt laminating plant. Practical man, not over 35, with knowledge of sales. Wonderful opportunity with established company. Address Box 56-143 care Paper Trade Journal. M-14

## Help Wanted

### ENGINEERS

**Mechanical and Electrical**

Must have minimum of fifteen years experience in pulp and paper field. Must possess imagination and willingness to assume responsibility. No age limit. Desire to improve position and professional status important. Reply, giving complete resume of education and experience and include a recent snapshot. North central Wisconsin location.

Interviews at your convenience.

Address Box 56-151 care Paper Trade Journal.

M-14

### CHEMICAL ENGINEER

Opening for recent graduate for process control and investigation in the Technical department of an expanding Kraft linerboard mill. Send complete resume to: Chief Chemist, Western Kraft Corporation, Albany, Oregon.

M-21

### Supervisor of Application Research

Growing company supplying raw materials to the paper industry has responsible position for above-average chemist or chemical engineer to work in new modern research center located 25 miles from New York City in attractive New Jersey setting. Knowledge of coated paper manufacturing required, with machine coating background especially helpful. Age 28-37. Good salary and benefits with excellent opportunity for advancement. Write or phone our Personnel Department.

**MINERALS & CHEMICALS CORPORATION OF AMERICA**
**Menlo Park, New Jersey**
**Tel.—Liberty 8-2200** M-14

### SALES ENGINEER

Want young man with college and about one year of mill experience. Travel does not exceed 4 months per year selling specialty equipment. Balance work in midwest factory office. Fine hunting and fishing area. Attractive compensation plan.

**DeZurik Shower Company**
Sartell, Minnesota

M-28

### WANTED

Paper chemist for product development of chemicals for pulp and paper industries. 2-5 years experience in these fields necessary. Outstanding growth potential in newly formed Product Development Department of the ATLAS POWDER COMPANY located in Wilmington, Delaware. Direct all replies to: R. L. Herrman, marked personal. All responses held confidential.

M-14

## FOR SALE

**PRINTING PRESSES**

1—52" Wide 4 Color Manton Oil Ink Press.
1—42" 4-color Kidder Std Aniliner
1—40" 4-color Hudson-Sharp Flexographic, with Variable Sheeter.
1—36"x66" 4-color Meisel Oil Ink Rotary.
1—34" 2-ColorManhassett. Roll to Roll wire Slitting Attachment.
1—30" 4-color Paper Converting Machine Co.'s Roll to Roll Oil Ink Press.
1—26" 3-Color Potdevin Flexo Tailprinter
1—22" 2-Color Potdevin Roll to Roll Flexographic Tailprinter.
1—20" Wolverine Flexographic Cub Printer, roll to roll, practically new.
3—15" 1-color roll to roll Flexographic presses
3—Chambon oil ink presses 1—13" 4-color, 1—18" & 1—28" 3-color

**POWER PAPER CUTTERS**

19—Seybolds 1—56" Precision; 56" 12Z; 40", 44", 50", 57", 64", 74" 10Z; 50", 56", 64", 84" Daytons; 44" & 74" 20th Century; 34", 44" & 75" Holyokes; 36" 2Y; 3 Oswegos, 44", 57" & 68"; 3 Sheridans, 36", 40" & 65"; 1 3VA Seybold 3 Knife Trimmer

**CAMACHINES**

1—62" Type 10-84
1—62" Type 40 1AF
1—62" Type 26-7AM
1—52" Type 10-6
1—50" Type 6
1—42" Type 9-5-A
1—42" & 62" Type 6
1—42" Type 10-5A, 30" rewind
1—42" & 1—52" Type 24-2A
1—42" Type 40-50 (Roll Doctor)
1—40" Type 40

**OTHER SLITTERS**

1—84" Waldron Double-Drum, Shear-Cut, 50" Max. Rewind.
1—62" Johnston model 12 score cut—VS drive
1—60" Langston Type "B" 50" rewind
1—48" Inman.
1—40" Type "A" Langston Shear-Cut
1—36", & 1—40" Kidder SL Model.
1—30" & 1—40" Beck Razor Blad Slitter.
1—40" Kidder SH Model—40" rewind.
1—50" Meisel Series O-P Shear-cut.

**MISCELLANEOUS MACHINES**

1—Roto Bag Machine Model "C" with electric eye
1—Complete ½ bbl. Coty Tuber
1—Model 111-C Potdevin F & S cellophane bag machine
1—ATF-Webendorfer Carbon Processor
1—ATF-Webendorfer Interleaver and Zigzag Folder
1—Hudson Sharp facial tissue folder
1—40" Waldron Knife Coater.
1—30" Hudson Sharp Waxing Machine. Type AW2
1—52" Waxer & Laminator
1—64" Sheet Paraffining Machine
1—72" Mayer Equalizer Type Waxing & Laminating Machine
1—75" Potdevin Type Squeeze Roll Waxing Machine
1—Langston Tube Winder Equipment
1—18" & 1—24" Schultz Automatic Roll Machine
7—Die Presses 1—50" x 22" & 1—44" x 22" Sheridan, 1—38" x 24" Type UA—2—17" x 42" Seybolds.
1—37" x 24 Kidder.
5—Waldron Embossers, 1—27", 1—32", 1—40", 1—44" heavy duty & 52"
7—Embossers, 1—26", 1—30", 3—60", 1—72" & 1—81"
1—2 oz & 1—½# to 1# Cellophane Bag Machines
2—Paper Converting Machine Co.'s ¼ Fold Napkin Machines, 1—2 web.
1—Hudson-Sharp 13½" x 13½" ¼-Fold Napkin Machine
2—81" Paper Convertors facial toilet winders (Chatham Tissue)
2—Model "A" Junior Lawtomatic Toilet Roll Wrapping Machines
1—48", 55", 67", 76" and 100" Hamblet Single Rotary Sheeters with backstands and layboys.
1—90" Moore & White Single Rotary Sheeter with backstands
1—45 & 1—#5 Potdevin Sack Machines
1—48" Hudson Sharp Embosser-tinter

**PAPER AND PULP MILL MACHINES**

1—60" Holyoke 10 Roll Stack of Super Calenders.
3—Nash Vacuum Pumps, L-5, L-6 and L-7
5—3 Pocket Grinder Stones, 26" & 27"x54"
1—Sutherland Right Hand 42" Disc Refiner

**GIBBS-BROWER CO., INC.**
10 Depot Plaza, White Plains, New York
Telephone—ROckwell 1-1130 M-14

# ROSS PAPER MACHINERY COMPANY

CABLE ADDRESS
JACKROSS

265 PASSAIC STREET • NEWARK 4, NEW JERSEY

BUY WITH CONFIDENCE — RPM SINCE 1919 — SELL WITH CONFIDENCE

USED PAPER MAKING & CONVERTING MACHINERY

Humboldt 2-2177

## IMMEDIATE DELIVERY FROM AMERICA'S LARGEST INVENTORY OF PAPER MACHINERY

**BALERS**

1—Buffalo Baling Press—upstroke w/motor.

**BEATERS**

1—Dilts high speed iron tub. Roll 62" dia. x 54" face with 75 HP motor & controls.
1—E. D. Jones "Bertram" 1500 lbs. Roll 72" x 63". C. I. Tub. Complete with Foxboro Air Cylinder Control and washer. Driven by 3 h.p. gear head motor. Used 2 years.

**CYLINDER MOULDS**

3—136" face x 54" dia.—stainless steel covering.

**CALENDER STACKS**

1—Black Clawson 82" 3 roll with doctors.
1—Black Clawson 82" 5 roll with doctors.
1—Black Clawson 90" 7 roll with 3 spare rolls.
1—Black Clawson 104" 7 roll w/doctor and water cooled bearings.
1—Lobdell 124"—9 roll stack—water cooled bearings.
1—Lobdell 134" 7 roll, loader operated roll raising device, force lube system. Complete with doctors.
1—Lobdell 150" 7 roll, loader operated roll raising device, force lube system. Complete with doctors.
1—Sandy Hill 84" 7 roll, with doctors.

**CLASSIFINER**

1—Dilts Classifiner w/spare discs.

**DRIVES**

3—Hamilton Parallel enclosed Drives; 1—60 h.p.; 1—100 h.p. and 1—125 h.p.
9—Reeves Open and Enclosed, Sizes 0-D, 1-D, 1E, 3F, 3G, 5E, 6C.

**DRYERS**

2—42" face x 36" dia.
3—44" face x 36" dia.
2—46" face x 36" dia.
42—46" face x 24" dia. chrome plated, complete with 2-deck frames, gears, bearings, steam joints.
24—46" face x 48" dia. chrome plated, complete with gears, bearings, steam joints.
3—52" face x 48" dia. with gears & bearings.
1—52" face x 24" dia. with gears & bearings.
7—58" face x 36" dia., complete with 2-deck frames, gears, bearings, steam joints.
2—84" face x 28" dia.
7—84" face x 36" dia. with gears.
1—86" face x 36" dia. with bearings.
2—88" face x 36" dia.
1—90" face x 18" dia. with A-F bearings.
4—90" face x 36" dia. with A-F bearings.
1—104" face x 36" dia.
1—104" face x 48" dia.
1—110" face x 42" dia.
11—113" face (see attached list).
11—113" face x 48" diameter with bearings.
1—116" face x 48" dia.
1—120" face x 23" dia. with rope carrier.
7—120" face x 48" dia. with rope carriers.
1—120" face x 42" dia.
1—124" face x 48" dia.
1—126" face x 48" dia.
13—127" face x 42" dia.
1—130" face x 48" dia.
2—160" face x 28" dia. with rope carriers.
10—160" face x 36" dia.
1—160" face x 42" dia.
43—160" face x 48" dia. complete dryer section including felt dryers, felt rolls, etc.

**EXTRACTOR ROLL**

1—Downingtown 138" x 24" Extractor Roll with 19" diameter rubber riding roll—all anti friction bearings.

**FILTERS**

1—Oliver Continuous Filter, Cylinder 8' Diameter x 10' Face, Steel Vat. Complete with repulper and drives with motors. Used 2 Months.
1—Oliver Filter 6 ft. face x 6 ft. dia. Model covered cylinder, steel vat, complete with drive.

**FLAT SCREENS**

3—8 plate Sandy Hill roller shoe with scrapers.
2—8 plate Bagley & Sewall with scrapers.
2—12 plate Sandy Hill, anti friction bearings.

**JORDANS**

1—Appleton #2 anti-friction Bearings with 150 HP Westinghouse, Synchronous Motor and Stainless Steel filling.
2—E. D. Jones pony Jordans 3/16" stainless with stainless steel filling.
2—E. D. Jones standard Jordans—anti friction bearings.
1—E. D. Jones Pony Jordan, ball bearing, with stainless steel filling.
1—Smith & Winchester standard with granite filling.
1—Noble & Wood Bull Dog Jordan. Anti friction bearings with coupling and motor base.
1—Appleton #2—anti friction bearings.

**KNIFE GRINDERS**

1—132" Rogers with motor. Used 5 months.
1—130" Hanchett belt driven complete with coolant pump, and 2 spare wheels.
1—92" Seybold with motor.

**LABORATORY EQUIPMENT**

1—Biggs 6' diameter Rotary Digester 100# pressure.

**MOTORS**

12—125 H.P. Westinghouse synchronous enclosed. Brand new. 440 volt, 720 rpm forced air ventilation with starters.
1—Westinghouse 300 h.p., 388 r.p.m., 440 v., 3 phase, 60 cycle.

**PASTING MACHINE**

1—Hudson Sharp 72"—3 roll Paste Applicator with Link Belt Reducer and 25 h.p. motor. (New 1946).

**PULP EQUIPMENT**

3—2 ft. x 8 ft. type 300 Tyler Niagara stainless steel Chip Screens.
1—3 ft. x 8 ft. type 300 Tyler Niagara stainless steel Chip Screens.
1—Lannoye Pulper—enclosed drive and 30 h.p. motor.

**PULP PRESSES**

1—Hydraulic Machine Co. 250 tons 30" x 36" platen, 48" daylight, 30" stroke, 16" ram —upstroke. For baling dry pulp.

**PUMPS**

44—Centrifugal Pumps open & closed impellers.

**REELS**

1—Pusey & Jones 162" drum reel.
1—Downingtown 104" 2 bowl reel.
1—138" English Drum Reel.

**REFINERS**

2—34" Sutherland Disc Refiner, stainless steel discs. 1—left hand and 1—right hand.

**ROLLS—PRESS, COUCH, CALENDER, etc.**

32—Press rolls, brass and rubber covered.
14—Couch rolls, brass and rubber covered.
250—Brass and steel carrying rolls.

**ROTARY SCREENS**

1—#2 Bird—Copper vat.
4—#2A Bird with copper vats.

**SHEETERS**

1—Cameron 124" quick change double slitter assembly for board sheeters. Complete with 16 pneumatic slitters.
1—Moore & White simplex 114" sheeter with Maxson Layboy, overlapping delivery, 8 roll backstand motor and starter.
1—Hamblet 100" single knife with 3 slitters.
1—Hamblet 81" duplex with Erie Layboy 12 roll backstand and motor.
1—Hamblet 75" with layboy and backstands.
2—Hamblet 110" single knife sheeters.
1—Beck 45" sheeter.
1—Beck 48" with jogger.
1—Hamblet 55" with 3 roll backstand.
3—Moore & White 80" w/overlapping layboy.

**SHREDDERS**

2—Mitts & Merrill Air Fluff Paper Shredder. Used 9 months.
1—Mitts & Merrill #17-2A paper shredder.
2—Taylor Stiles Giant Stock Shredders, Style 36.

**SLITTERS AND WINDERS**

1—Cameron 42" Model 6.
2—Cameron 165" Model 18—Complete with motor drive and roll ejector.
1—Cameron 194" Model 19. Anti-friction bearings, 2800 f.p.m., equipped with air operated quick change, constant tension and roll ejector.
1—Moore & White 66"—two drum.
3—Essex 42" center wind—30" duplex rewind. Anti friction bearing equipped.
1—Cameron 42" Model 9-5.
1—Cameron 62"—Model 6.
1—Cameron 62" Model 26-3A, duplex rewind, complete with motor.
1—Cameron 84" Model 9-5—rewind 36".
1—Schultz 18"—Automatic with motor.

**STOCK PUMPS**

1—Shartle 10 x 20 single plunger pump.
1—Moore & White 10 x 16 Triplex.
1—Beloit 8 x 10 Triplex.
1—Downingtown 8 x 18 triplex, with enclosed drives and motor.

**SUCTION BOXES**

5—192" Aluminum Suction Boxes.

**SUCTION COUCH ROLLS**

2—Beloit 25" diameter x 114" face, anti friction bearings, with stands. Direct drive.
1—Millspaugh 30" dia. x 192" drilled face, Trunnion roller bearings, stands, etc.
1—Sandusky suction couch 25" diameter x 122" drilled face.
1—Sandusky suction couch 18" diameter x 122" drilled face.
1—Sandusky 28" diameter x 162" drilled face complete Trunnion Roller Bearing.
1—Sandusky 22" diameter x 135" drilled face trunnion roller bearings.
1—Sandusky 18" diameter x 116" drilled face.

**SUCTION PRESS ROLLS**

1—Millspaugh 30" diameter x 194" drilled face with bearings, stands, etc.

**SUPERCALENDERS**

1—Norwood 30" 5 roll, with motor drive.

**TISSUE AND TOWELING MACHINE**

1—B & S 90" single cylinder machine. Complete including pumps, piping, valves, enclosed drive and VS motor drive. Full details on request.

**TRIMMERS POWER BACK GAUGES**

1—Oswego 50".
1—Seybold 94" Model 15 ZJ.
1—Seybold 64" Model 12-Z.
1—Seybold 84" Dayton with motor and spare knives.
1—Seybold 72" Dayton.

**VACUUM PUMPS**

1—Nash H-3 with 5 h.p. motor.
2—Nash H-4.
1—Nash L-3 totally encl. 5 h.p. motor.

**VOITH INLETS**

1—New Valley Iron Works 156" x 36" monel lined inlet and head box.
2—Valley Iron Voith Inlets, adjustable 83" to 86"—Brass lip, stainless steel apron.
1—Valley Iron Works—106".
1—Valley Iron Works 151" stainless steel inlet and head box.
1—Bagley & Sewall 144" stainless steel clad high speed inlet and headbox.

**VORTRAPS**

7—Nichols 4" stainless steel Vortraps—rubber lined heads.

**WASHERS**

1—IMPCO 3 stage Washer. Cylinders 84" x 42" with 20" dia. rubber couches, iron end vats, complete with enclosed drives and individual motor drive. Used 1 year.

**WET MACHINES**

1—Rogers 72" x 48" Wet Machine. Double press sections.

**YANKEE DRYERS**

1—10 ft. diameter x 132" face with bearings and Morse Silent Chain Drive.
1—Beloit 12 ft. diameter x 140" face—75 lb. steam pressure.

## Help Wanted

### GRADUATE CHEMIST
or
### CHEMICAL ENGINEER

Who would qualify by education or experience for a position in research on paper board, felt for roofing and floor covering products and pulp molded products. The opening is at our Massachusetts location. Salary commensurate with experience and education. Send complete resume to:

**BIRD & SON, INC.**
EAST WALPOLE, MASS.

M-21

### RESEARCH CHEMIST

for research and development of by-products from sulphite spent liquor and in the use of resins and polymers in paper and protective coatings on paper. Background of organic chemistry and applications of organic materials is essential. Experience in uses with paper is desirable.

Include resume and personal data in reply to R. C. Crain, Research Director, Rhinelander Paper Company, Rhinelander, Wisconsin.

M-21

### MAINTENANCE SUPERINTENDENT

Outstanding opportunity in new modern paper plant with progressive and rapidly expanding company. Must have paperboard mill experience. Steam plant experience desirable but not essential. Age 35-45. Excellent benefit programs including stock purchase plan, retirement, insurance, hospitalization, etc. Please submit detailed resume of experience, education, salary requirement, and personal data to Box 56-159. Replies will be held in strict confidence. M-14

### TECHNICAL SALES REPRESENTATIVE

Excellent opportunity to represent specialty chemical manufacturer which is growing rapidly. Must have experience in production or control work in pulp and paper mill. Territory Southeast United States. Salary plus expenses and commissions. Reply Box 56-144 care Paper Trade Journal. M-14

**Personnel Service Associates**
**115 State St., Springfield 3, Mass.**
**Tel. RE 6-4749**

**Attractive positions for Administrative, Technical, Production and Sales executives and personnel in Manufacturing, Conversion and Distribution.**
**Personalized Services. Confidential**
M-14

### WANTED

Assistant Finishing Superintendent and Finishing Room Foreman for New England mill operation. Experienced aggressive men to finish quality fine papers. Salary commensurate with experience and ability. Reply Box 56-135.

M-14

Wanted — Tour Foreman — For night work. North Jersey Fourdrinier Board Mill—Nine point and specialties. Address Box 56-96 care Paper Trade Journal. TF

## Situations Wanted

MECHANICAL ENGINEER—Over 30 years experience in Supervisory Engineering and Management capacities. Very successful and proven record in Engineering, Power and Production. Invites correspondence. For permanent or special assignment. Mid west preferred. Address Box 56-136 care Paper Trade Journal. M-28

## Situations Wanted

### TRAINED EXECUTIVE

**Broad experience with kraft pulps; specialty papers and paper board. If you need better quality and increased production call or write Herbert Maus — Phone 204J — Box 149 — Springhill, Louisiana. 32 years experience — results guaranteed.**

M-14

Chemical Engineer with 7 years experience in the Paper Industry seeking a position preferably on development work of coated papers.

Previous experience consists of investigational work and quality control supervision in paper mill; also, quality control, supervision, and development work on asphalt and plastic coated papers. Familiar with production, testing and sales.

**Box 56-139 Care Paper Trade Journal**
M-14

SUPERINTENDENT wishes to make change. have had 30 years of practical experience in manufacture of paper such as Bond, Ledger, Bristols, Offset and similar grades, both in Sulphite and rag. Can furnish references. Address Box 56-124 care Paper Trade Journal. M-14

WORKS MANAGER—Production Executive; paper, board and conversion; seeks challenging opportunity in organization needing man exceptionally capable in organization; manufacturing; and labor relations. Employed. Diversified lines. Address Box 56-109 care Paper Trade Journal. M-28

POSITION WANTED—Tour Foreman seeks position offering early advancement to man of proven ability, with engineering and technical backgrounds, in design, job formation, water removal, drying, formulation, de-inking, color and stock preparation, for quality and high production. Age 47 years. Address Box 56-152 care Paper Trade Journal. J-4

SUPERINTENDENT—With technical background. Can produce cylinder specialties of high quality on modern high speed cylinder machines. Capable of assuming full charge of all manufacturing operations. Address Box 56-155 care Paper Trade Journal. M-28

## For Sale

### FOR SALE

**50" Hamblet Sheeter with Maxson Layboy and Counter**
**72" Hamblet Sheeter with Layboy and Backstand**
**96" Moore & White Sheeter with Layboy and 8-roll Backstand**
**36" Waldron 2-drum rewinder**
**42" Cameron Type 24-3A**
**48" Kidder Slitter, two rewind shafts**
**30" Hobbs Slitter**
**60" Moore & White Layboy**
**44" Chandler & Price Automatic Clamp Power Cutter**
**20 New Fast Flexible Couplings for 2, 2½ & 3½" shafts.**

**Thomas W. Hall Company**
**Stamford, Conn.** TF

### FOR SALE

60" trim Board Machine all set up as last operated, which was last producing about 20 tons of jute liner.

Frank H. Davis Co., 175 Richdale Avenue, Cambridge, Massachusetts.

M-21

## For Sale

### FOR SALE — PHOENIX, N. Y.

### TISSUE AND TOWELING PAPER MILL

Production 15,000 lbs. Tissue or 20,000 lbs. Toweling. Brick and concrete sprinklered buildings — 25,000 square feet on river with two water wheels, 250 h.p. each with generators.

Excellent skilled labor available.

90" Bagley & Sewall single cylinder machine complete including enclosed drives and main motor drive.

Machine including stock preparation equipment erected and ready to run.

READY FOR IMMEDIATE START UP.

**ROSS PAPER MACHINERY COMPANY**
265 Passaic St. Newark, N. J.
Tel. HUmboldt 2-2177
TF

### FOR SALE

1 — 86" Fourdrinier Paper Machine in operation at 400 f.p.m. Wire 86" x 69 ft. 10". 30 Dryers 48" diameter.

Complete with mortised gear drive.

Trimming 77" on Kraft Paper.

**ROSS PAPER MACHINERY COMPANY**
265 Passaic St., Newark 4, N. J.
Tel. HUmboldt 2-2177
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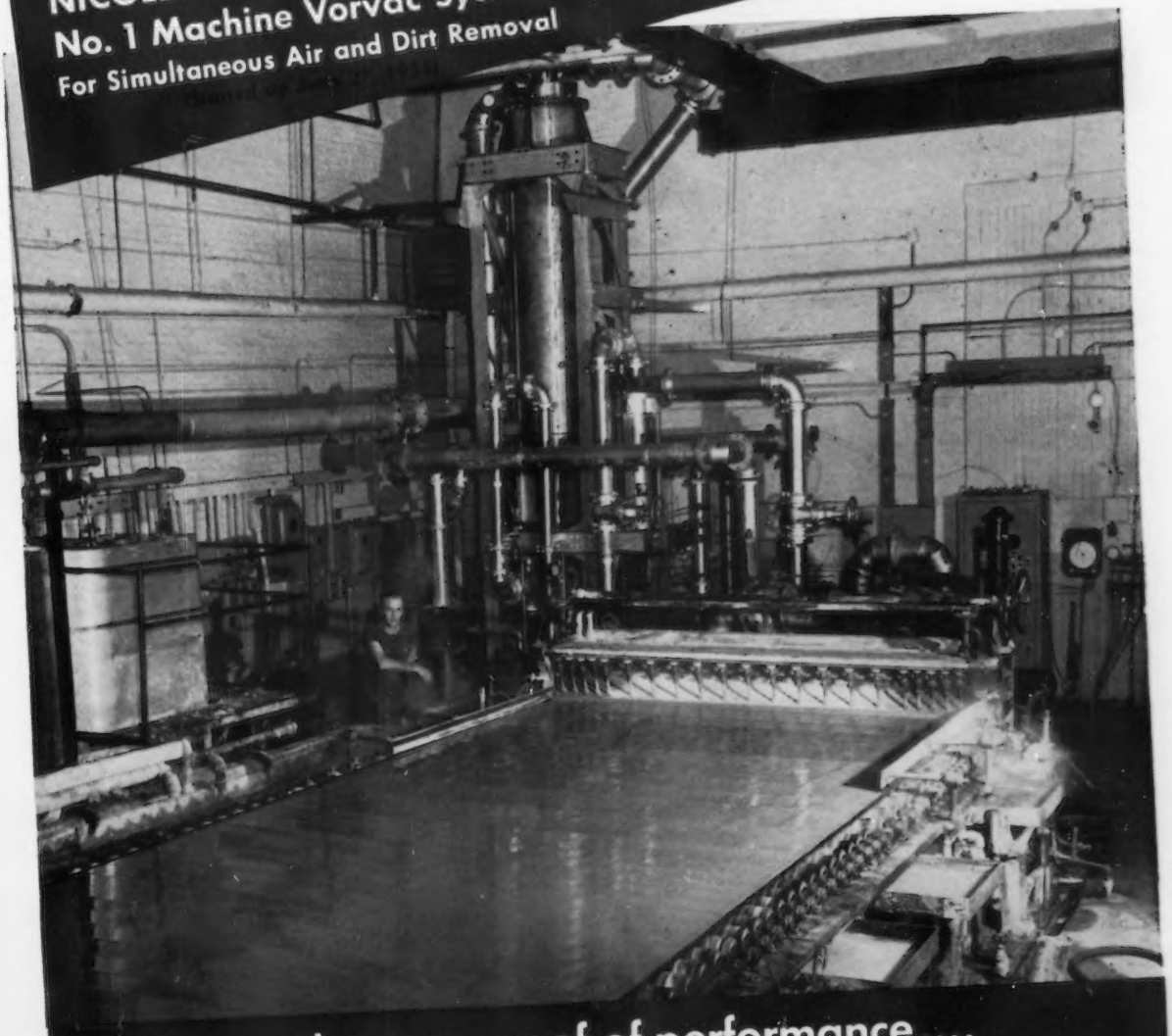

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